FINAL PRELIMINARY ASSESSMENT REPORT FOR AQUEOUS FILM-FORMING FOAM AREAS AIR FORCE PLANT 44 TUCSON, ARIZONA

Contract No. W9128F-15-D-0028
Task Order 0003

April 2018

Prepared for:

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFP	Air Force Plant
AFCEC	Air Force Civil Engineer Center
ADNR	Arizona Department of Natural Resources
ADWR	Arizona Department of Water Resources
AFFF	Aqueous Film-Forming Foam
Ayuda	Ayuda Companies
bgs	Below Ground Surface
CDC	Centers for Disease Control
CEC	Contaminants of Emerging Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH2M	CH2M Hill
EASI	Easy Analytical Software, Inc
ECF	Electrochemical Fluorination
EDR	Environmental Data Resources
EGC	Environmental Geoscience, and Construction Management, Inc.
EHSS	Environment Health, Safety, and Sustainability
ft	Feet
FTA	Fire Training Area
HGL	HydroGeoLogic, Inc.
Hughes	Hughes Aircraft Company
IRP-RS	Installation Restoration Program Phase I-Records Search
NETR	Nationwide Environmental Title Research
NWS	National Weather Service
PA	Preliminary Assessment
PFAS	Per- and polyfluoroalkyl substance
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PWS	public water system
RMS	Raytheon Missile Systems
RPM	Restoration Project Manager
SAIC	Science Applications International Corporation
SDWA	Safe Drinking Water Act
SI	Site Inspection
Telomers	Telomerization
UCMR	Unregulated Contaminant Monitoring Rule
UCMR3	Unregulated Contaminant Monitoring Rule (third)
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Society
WPI	Waste Policy Institute

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Omaha District has been designated as the service center to procure a contractor to conduct Preliminary Assessments (PA) of aqueous film-forming foam (AFFF) areas at multiple locations for the Air Force Civil Engineer Center (AFCEC). Ayuda Companies (Ayuda) and teaming partner CH2M Hill (CH2M), (the Ayuda Team) are conducting PAs at nine United States Air Force installations under Contract No. W9128F-15-D-0028, Task Order No. 0003, and following the guidance and policy outlined in Management Guidance for the Defense Environmental Restoration Program (Office of the Deputy Under Secretary of Defense (Installations and Environment), 2001). The Ayuda team is conducting the PAs in accordance with the United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (USEPA, 1991). The PA evaluates use, storage, and potential releases of AFFF at fire training areas (FTAs) and non-FTAs. Locations that are considered non-FTAs include, but are not limited to, hangars, fire stations, emergency responses, and any other location where the potential exists for AFFF to have been released into the environment. Evaluation of environmental releases is conducted through an Administrative Record document search, interviews with installation personnel with knowledge of past or current operations involving use of AFFF, and site reconnaissance to observe areas identified during the document review and interviews.

1.1 Purpose and Objectives

The purpose of this PA report is to present results of assessments conducted to identify locations at Air Force Plant (AFP) 44 where use or storage of AFFF may have resulted in potential releases of per- and polyfluoroalkyl substances (PFAS) creating a source of perfluorooctane sulfonate (PFOS)/perfluorooctanoic acid (PFOA) to the environment, and to evaluate possible AFFF-derived PFOS and PFOA migration pathways and potential contaminant receptors. Although PFASs in general, and PFOS/PFOA are not federally regulated compounds, and it is unknown whether they will become regulated contaminants with enforceable standards, this AFFF PA is being proactively initiated by the United States Air Force (USAF) to evaluate potential AFFF releases in order to be protective of human health and the environment.

PFASs are used in numerous industrial applications and products, as described below, however this PA is focused solely on AFFF as a source of PFOS and PFOA potentially released to the environment.

The objective of this PA report is to differentiate between a site that poses little or no potential threat to human health and the environment, and a site that warrants further assessment. If the PA concludes that any site warrants further assessment, a Site Inspection (SI) will be recommended to further evaluate the potential for release through environmental sampling and analysis. If there is no evidence that AFFF was released to the environment, the site will be recommended for closeout with no additional investigations.

Ayuda conducted a PA site visit at AFP 44 on January 19, 2017. Figure 1-1 shows the location of AFP 44. Figure 1-2 shows the layout of AFP 44 and sites identified for assessment.

1.2 PFAS Background

PFASs are a large group of manmade chemicals that have been used in industry and consumer products worldwide since the 1950s. Products such as waterproof clothing, molded plastics, receipt paper, carpet stain preventers, Teflon® cookware, and fast food wrappers are all examples of general industry products that may contain PFASs. The electroplating process has been shown to use PFASs (PFOS mist) in the suppression of hexavalent chromium volatilization (USEPA, 2009). However, AFFF is not known to be used in the plating process. PFASs are also used in the formulation of AFFF, which was widely used as a

firefighting agent used to suppress aircraft and other vehicle fires, and in aircraft hangar fire suppression systems. PFASs are particularly desirable in AFFF because of their unique characteristic of allowing the AFFF to flow across burning petroleum, allowing water to form a layer on top of the burning liquid, which cools and extinguishes the fire.

The PFASs used in AFFF have historically been manufactured by two processes: electrochemical fluorination (ECF) and telomerization (telomers). ECF-based AFFF contains and degrades into perfluorooctane sulfonate (PFOS), which is considered persistent and bioaccumulative. Telomer-based AFFF does not contain or break down into PFOS and is not considered persistent or bioaccumulative. However, the Environmental Protection Agency has indicated that some telomer-based fluorochemicals can break down in the environment into perfluorooctanoic acid (PFOA), which is considered persistent and bioaccumulative (Fire Fighting Foam Coalition, 2014).

PFAS compounds are colorless, odorless, highly soluble in water, and typically have very low volatility due to their ionic nature. These compounds do not readily degrade by most natural processes. They are thermally, chemically, and biologically stable and are resistant to biodegradation, atmospheric photooxidation, direct photolysis, and hydrolysis. PFASs are mobile in soil and leach into groundwater. PFASs have been found to bioaccumulate in animals and humans (Association of State and Territorial Solid Waste Management Officials, 2015). While PFAS chemical compounds are colorless and odorless, many AFFF solutions are described as pale yellow or amber-colored with a clean, sometimes sweet odor.

PFOS and PFOA are termed "contaminants of emerging concern" (CEC) and their impact on human health and the environment is not entirely understood, since little sampling data exists. While the USEPA has issued health advisories for PFOS and PFOA as federal guidelines, there are currently no regulatory standards or Federally established Maximum Contaminant Levels for these CECs. In addition to their designation as CECs, PFOA and PFOS were added to the third iteration of the USEPA's Contaminant Candidate List, which identifies potential compounds for monitoring under the Safe Drinking Water Act (SDWA). The program that implements contaminant monitoring under the SDWA is the Unregulated Contaminant Monitoring Rule (UCMR), which requires public water systems (PWSs) to collect samples and analyze for unregulated contaminants. In May 2012, PFOA, PFOS, and four other PFASs were added to the list of compounds to be monitored under the third UCMR (UCMR3) over a two -year period between 2013 and 2015. Only those PWSs serving a population of 10,000 or more people and a select number (800) of PWSs serving 10,000 or less people fall under the purview of the UCMR. The City of Tucson, which supplies drinking water to AFP 44, monitors for the presence of PFASs under UCMR3 (USEPA, 2017). PFOS was detected in a sample collected on April 16, 2013 and a sample collected on November 20, 2013. UCMR3 analytical information is available through the USEPA webpage.

In the United States, making and using these chemicals in consumer products has decreased during the past 10 years. However, other countries still produce PFASs which can be imported into the United States in limited quantities. The largest U.S. manufacturer of PFASs voluntarily stopped producing them in 2002. Studies have been conducted on the way PFASs affect animals' health, but scientists are still trying to understand how exposure to PFASs affects human health. PFASs are resistant to degradation from heat, oil, grease, and water (Centers for Disease Control and Prevention [CDC], 2015). In 2006, EPA and major companies in the PFAS industry launched the 2010/2015 PFOA Stewardship Program. The goal of companies participating in the program was to stop producing PFASs and related chemicals by 2015 (CDC, 2015).

In 2016, the Air Force began replacing existing supplies of higher (8+) carbon chain AFFF with Phos-Chek® 3 percent, an AFFF that was developed under the EPA's PFAS Stewardship Program and is reported to contain no PFOS and little to no PFOA (Air Force Civil Engineer Center Public Affairs, 2016).

According to the AFCEC website, the USAF began using AFFF in approximately 1970 (AFCEC, no date), which is also supported by the following federal government documents:

- Military specification for AFFF (MIL-F-24385), formally issued in 1969; and
- A History of Fire Protection Training at Chanute Air Force Base (AFB), 1964-1976 (Coates, 1977).

Based on USAF performance testing results on AFFF, M.G. Goddard, the USAF director of civil engineering, issued authorization for the USAF to procure AFFF in 1970 (Coates, 1977). No usage of AFFF by the Air Force could have occurred prior to 1970.

1.3 Preliminary Assessment Methods

Tasks conducted during performance of the PA at AFP 44 include the following:

- Conducting a pre-site visit conference call;
- Gathering on-site background data during a site visit;
- Conducting interviews with individuals who have knowledge of installation history to identify and document locations (potential sites) where AFFF storage, use, and potential releases may have occurred;
- Conducting site reconnaissance to visit sites identified during the document search and interviews;
- Evaluating information collected to determine if the site warrants further assessment (Site Inspection) of the presence of PFOS and PFOA derived from AFFF; and
- Preparing a PA report to document conclusions and recommendations based on results of the site visit and interviews.

In addition to the above list, resources (databases, documents, geographic information system mapping layers), were utilized for completion of this PA Report for CMAFS, including but not limited to:

- Environmental data records search to document nearby population information;
- State and Federal EPA resources;
- United States Fish and Wildlife Services (USFWS) resources;
- United States Geological Survey (USGS) resources;
- Department of Natural Resources;
- Air Force Easy Analytical Software, Inc (EASI) search results provided by CMAFS;
- Federal Emergency Management Agency resources;
- Air Force Plant 44 AFFF purchasing, storage, and use records for AFFF (when available [no requested purchasing records, storage documents, or records of the AFFF use were available]).
- A review of aerial imagery available on Google Earth and Nationwide Environmental Title Research (NETR) online.

A pre-site visit conference call was held on December 2, 2016 to discuss the site visit and arrange for a meeting time and Plant access for Ayuda personnel. Conference call attendees included the AFP 44 Restoration Project Manager (RPM) and Ayuda PA team members. After the conference call, a PA questionnaire was sent to the RPM, who forwarded the questionnaire to Raytheon, the contractor that has been operating AFP 44 since 1997. The questionnaire is based on collection of information regarding all known or suspected past or present use, storage, spills, or other handling of AFFF at the installation.

Ayuda conducted the PA site visit at AFP 44 on January 19, 2017. Participants included the AFP 44 RPM, Raytheon Missile Systems (RMS) Environment Health Safety and Sustainability (EHSS) Manager, RMS EHSS

Fire Chief, and RMS EHSS Fire/Life Safety Engineer. Appendix A presents communications records from the site visit interviewees, and Appendix B presents a summary of the site visit notes, including attendees.

Supplemental information from the site reconnaissance was added to the completed questionnaire with AFP 44 review and approval. The completed questionnaire is provided in Appendix B.

Site reconnaissance was conducted during the site visit to observe sites identified during the document search and interviews. Site reconnaissance was conducted to observe evidence of potential AFFF release, conduct further discussions with site personnel as applicable, observe surface topography and potential surface water drainage paths, inspect potential containment structures, and look for evidence of past fire, which would prompt questions as to the nature of the extinguishing agent.

Many AFFF solutions are described as pale yellow or amber-colored with a clean, sometimes sweet odor. It is also possible that AFFF can leave a slippery surface after it is spilled (See Appendix F MSDS). While it may be difficult to observe evidence of an AFFF release, it was incumbent upon the assessor during the site reconnaissance to inspect the site for possible evidence of a release in the areas being assessed. Evidence of a release of AFFF may include puddling of yellowish liquid, staining, or a slippery surface.

Table 1-1 provides a list of FTAs and non-FTAs identified at AFP 44 where AFFF may have been stored, transferred, used, or potentially released.

1.4 Report Organization

This PA report has been prepared based on results of Administrative Record document reviews, information collected during the pre-site visit conference call, the AFP 44 site visit, and resources listed in Section 1.3.

This report is organized and presented, as follows:

- Section 1 is the Introduction, and includes the purpose and objectives of the PA report, a discussion of the description and presence of PFASs, and describes the methods used to conduct the PA at AFP 44;
- Section 2 describes the installation background, history, and environmental setting;
- Section 3 describes the FTAs identified during the PA site visit;
- Section 4 describes the non-FTAs identified during the PA site visit;
- Section 5 summarizes and provides conclusions for information collected during the AFP 44 site visit, and discusses assessment limitations;
- Section 6 provides references consulted during the preparation of this PA report;
- Appendix A contains Communication Records and provides records of all communications regarding the PA visit;
- Appendix B contains Site Visit Notes;
- Appendix C contains a Photographic Log and photographs taken during the PA site visit;
- Appendix D contains Preliminary Assessment Forms; and
- Appendix E contains Safety Data Sheets for AFFF stored or used at AFP 44.

2.0 INSTALLATION BACKGROUND

AFP 44 is located adjacent to Tucson International Airport, approximately 8 miles south-southwest of downtown Tucson, Arizona (Figure 1-1). It is bounded on the east by Tucson International Airport and on the west by South Nogales Highway, the Southern Pacific (now Union Pacific) Tucson-Nogales railroad line, and the San Xavier District of the Tohono O'odham Nation Indian Reservation. Hughes Access Road, vacant land, and light commercial property are south of AFP 44. The northern boundary of AFP 44 lies along the north section line of Township 15 South, Range 14 East, Sections 29 and 30, of the Gila and Salt River Base and Meridian. AFP 44 covers approximately 1,266 acres and has industrial facilities occupying a total building area in excess of 1.2 million square feet.

AFP 44, a government-owned, contractor-operated defense industrial plant, was constructed by Hughes Aircraft Company (Hughes) in 1951 for manufacturing Falcon air-to-air missiles. Hughes sold the plant to the Air Force in 1951. In December 1997, Hughes merged with Raytheon, which has operated the plant since that time. AFP 44 has been used for the production of weapons systems since its inception in 1951 (AECOM, 2010).

Historical industrial processes conducted at AFP 44, in conjunction with the production, maintenance, and modification of weapons systems, have included the following activities: cleaning and degreasing, plating, anodizing, chemical milling, chemical etching, printed circuit board production, heat treating, and painting. These processes generated wastewater and general industrial waste such as solvents, paint sludge, and thinners (AECOM, 2010).

AFP 44 is also part of the Tucson Airport International Superfund Site. According to the Tucson Airport International Superfund Site Five-Year Review Report, Operable Unit (OU) 3 within the Tucson Airport International Superfund Site pertains to AFP 44 for previously (unrelated to AFFF) documented environmental impacts (USEPA, 2013).

2.1 AFP 44 Environmental Setting

The following subsections describe the environmental setting at AFP 44, including geology, hydrogeology, hydrology, and ecological receptors.

2.1.1 Geology

AFP 44 is located along the western edge of the Tucson Basin. The Tucson Basin is a large structural or extensional basin within the Catalina Detachment Fault Zone located in the Basin and Range Geologic Province of the southwestern United States. The Santa Cruz Fault is thought to bisect the study area, with unnamed faults located to the east. The Cenozoic geologic history of the Tucson Basin was affected by two major tectonic events, the mid-Tertiary Orogeny (mountain building events) and the more recent Basin and Range Orogeny. The Basin and Range Orogeny began approximately 17 million years ago, during the middle Miocene and ended around 1.8 million years ago during the late Pliocene and early Pleistocene (USGS, 1988). The Basin and Range Orogeny transformed the landscape of the basins from an area of generally moderate relief into one of high relief characterized by deep structural basins bounded by high mountain ranges (Houser, et al., 2005).

During the Basin and Range Orogeny, the basin formed when normal fault bounded mountain ranges were uplifted and the valley, or hanging wall, down-dropped. Cross sections constructed for the USGS indicate the Santa Cruz normal extensional fault roughly follows South Nogales Highway, which runs north-south, just west of AFP 44 and the airport and east of most of the Tucson Airport Remediation Project area (Anderson, 1987). Basin deposits are substantially thicker (hundreds of feet) east of this fault and include gypsiferrous and anhydrite evaporite deposits at a depth of 500 to 1000 feet (Anderson, 1987). Following each Orogeny, the basin would fill with sediment (aggrade) and the sediment would be reworked by a combination of fluvial an aeolian forces, depending on the climatic forces in effect at the time (degrade),

creating eroded surfaces upon which subsequent sediments were deposited (Anderson, 1987). The depositional environment appears to initially have been alluvial fans entering a playa or lake as the basin filled (arid conditions leading to playa formation and humid conditions leading to lake formation) as a hydrologically closed system, shifting to the river system as water breached the north end of the basin, opening the system and allowing the basin to drain. The evaporite deposits mentioned above are characteristic of a playa (closed, arid) system and their uppermost extent marks the boundary between the closed and open system environments.

The sediments that underlie the site have been characterized as belonging to four broad, basin-wide stratigraphic units in descending stratigraphic order: unconsolidated surficial deposits, Fort Lowell Formation, the Tinaja Beds, and the Pantano Formation (Anderson, 1987). These designations are primarily age-based using the position of unconformities related to ancient erosional events (Anderson, 1987) and do not represent either lithologic or depositional characteristics. Therefore, there is substantial variability in the materials encountered within these formations. These units are discussed below.

Surficial deposits (alluvium) are composed of discontinuous sedimentary deposits that range from modern stream alluvium to alluvial fan deposits that overlie the Fort Lowell Formation. Transitioning northward, the surficial deposits consist of mainly stream alluvium with fewer alluvial fan deposits in the northern portion of the study area. The deposits consist of mainly gravelly sand with localized sand and sandy silt in the southern portion of AFP 44 to interbedded sands, gravels, silts, and clays in the northern portion. Depth of the surficial alluvial deposits ranges from a few feet to approximately 30 feet (ft) below ground surface (bgs).

The Fort Lowell Formation, the youngest formation of Pleistocene age consists predominantly of silty gravel near the basin margins, with increasing silty sand and clayey silt content toward the central part of the basin and extends to depths of approximately 200 to 250 feet. The Fort Lowell formation accumulated during the development of the Santa Cruz River system. The Fort Lowell Formation is 300 to 400 feet thick near the center of the basin and thins towards the mountains.

The Tinaja Beds of Miocene and Pliocene age are divided into three sub-units: Upper, Middle, and Lower Beds. The middle and upper Tinaja Beds were deposited during the main period of uplift (early to mid-Tertiary) before the development of flow through the basin lead to development of the Santa Cruz River system. The Tinaja Beds are comprised of sand and gravel at the margins of the basin and with an increasing clayey silt and mudstone content in the central portions of the basin, extending to a depth of approximately 250 to 300 feet bgs.

The Pantano Formation, the oldest unit of Oligocene age, is a reddish-brown, silty sandstone, that includes gravel with interbedded volcanic flows and tuffaceous sediments. The Pantano Formation was deposited during the main period of uplift in the early to mid-Tertiary before the development of flow through the basin. The thickness of the Pantano Formation is estimated to range from a few hundred to 1,000 feet.

The dominant soil type at AFP 44 is Sahuarita-Mohave Complex. The Sahuarita soil series consists of deep, well-drained soils formed on alluvial fan terraces in mixed calcareous alluvium. Typically, these soils have light yellowish brown, very gravelly, fine sandy loam surfaces that are about three inches thick (Science Applications International Corporation [SAIC], 1985).

2.1.2 Hydrogeologic Setting

The regional hydrogeologic setting at AFP 44 generally consists of coarse, relatively permeable units of sands and gravels laid down as vertically and horizontally grading stream and channel deposits associated with the

ancient Santa Cruz River system, bounded by fine-grained, less permeable units of fine sands, silts, and clays of the ancient flood plain (Environmental Geoscience, and Construction Management, Inc. [EGC], 2016).

The regional aquifer appears to be sequences of ancient channels of the Santa Cruz River. Other, smaller permeable units embedded in fine-grained material appear to be remnants of side streams that crossed the ancient floodplains, or crevasse-splay networks that drained floods through the levees of the ancient channels.

Based on previous hydrogeologic studies (EGC, 2016), the following sections describe individual hydrostratigraphic units underlying AFP 44. Because these units are each sequences of deposits rather than distinct deposits, they are sometimes highly eroded and may disappear and reappear. Furthermore, these are fluvial deposits and individual units are often not as extensive as deposits formed in other depositional environments. Fluvial deposits commonly grade laterally, meaning the textural descriptions given of samples from the same unit at differing locations may vary.

Alluvial Fan and Surficial Units

Deposits in the vadose or unsaturated zone at AFP 44 are clays, silts, and fine sands of levee-overbank deposits; and well sorted sands and gravels of channel deposits and are as deep as 100 ft bgs. Calcified silty fine sand or caliche beds are present in many areas, starting at five to 10 ft bgs and extending discontinuously to varying depths. Groundwater is not typically present within this unit. There are no drinking or public water supply wells in these units, according to the Arizona Department of Water Resources (ADWR) database (ADWR, 2017).

Alluvial Fan Aquitard

The Alluvial Fan Aquitard is an overbank deposit comprised of layered clays, silts, and fine sands, with occasional thin coarse-grained layers resulting from levee breaks (crevasse splay deposits) or streams crossing the flood plain. This layer is as thick as 80 feet in some places and overlies the Regional Aquifer. It pinches-out north of Hermans Road and west of South Nogales Highway. The pinch out likely represents a degradation event that eroded the basin. The AFP 44 shallow groundwater zone is contained within this aquitard at a depth of approximately 80 to 100 ft bgs. There are no drinking or public water supply wells in this aquitard, according to the ADWR database (ADWR, 2017).

Upper Aquifer Zone

The upper aquifer zone (Regional Divided Aquifer) consists of sands and gravels with clayey sand and clays to a depth of approximately 200 ft bgs and ranges in thickness from approximately 60 to 100 feet (Earth Tech, 1992). Groundwater of the upper aquifer zone occurs at depths of approximately 100 to 200 ft bgs. Recharge to the aquifer occurs most readily where the unsaturated zone is thin, such as along major streams, but may occur anywhere that substantial amounts of water are applied or collect naturally on a regular basis. Groundwater flow direction is to the northwest.

The upper aquifer zone can be divided at AFP 44 into an upper unit and lower unit separated by a discontinuous clay aquitard which is as thick as 80 feet in places. The upper zone aquifer is thus referred to as the Regional Divided Aquifer. These two transmissive units within the upper aquifer zone may represent laterally inconsistent paleochannels of the Santa Cruz River or alluvial channels of the Cienega Creek Alluvial Fan. In general, the upper aquifer zone shows a gradual coarsening of sediments from east to west at AFP 44. The clay aquitard dividing these two subunits varies in thickness across AFP 44 and begins to pinch-out west of South Nogales Highway and the upper zone aquifer becomes undifferentiated. The aquitard consists mostly of clays with some transitional lenses of clayey sands and clayey gravels.

Vertical movement of water between the upper and lower units of the upper aquifer zone would depend largely on the continuity of coarse-grained sediments and thickness and continuity of the fine-grained

aquitard. According to the ADWR database (ADWR, 2017), the upper aquifer zone is used as a source of domestic and public water supply.

Lower Aquifer Zone

In general, the lower aquifer zone (Regional Undivided Aquifer) consists of clays, clayey sands, sands, and gravelly sands that are typically more cemented than the upper groundwater zone. The lower aquifer zone is not divided by an aquitard and is therefore referred to as the Regional Undivided Aquifer. Groundwater occurs in the lower aquifer zone under semi-confined conditions and at depths of approximately 300 ft bgs at AFP 44. The total depth of the lower aquifer zone has not been well established in the vicinity of AFP 44 but existing data suggest it reaches depths of up to 600 ft bgs (DBS&A, 1993).

The permeability of the lower aquifer zone is one to two orders of magnitude less than the permeability of the upper aquifer zone because it contains more clay, is more poorly sorted and is more heavily cemented than the lower aquifer zone sediments (Hughes Missile Systems Company, 1995). Aquifer pumping tests have shown no interconnection between groundwater in the upper and lower aquifer zones (EGC 2016). According to the ADWR database (ADWR, 2017), the lower aquifer zone is used as a source of public water supply.

The main source of recharge to the regional aquifer is streamflow that infiltrates along the major channels. When streams are flowing, water moves by gravity down through the sediments to recharge the aquifer. Another major source of recharge is water entering the aquifer margins along the mountain fronts as infiltrated water from many small stream channels and directly from cracks in the rocks of the mountains. Another substantial source of recharge to the regional aquifer is from the subsurface flow of water into the Tucson Basin from Canada del Oro and the Santa Cruz River through the permeable deposits that underlie these streams. Other sources include water returned to the aquifer after having been used for public supply, agriculture, mining, or industrial uses. Figure 2-1 shows the locations of domestic wells within a 4-mile radius of AFP 44.

2.1.3 Hydrologic Setting

The general topographic gradient and surface flow direction at AFP 44 are to the west-northwest (USFWS, 2017).

Near AFP 44, surface water drainage consists of ephemeral streams, drainage channels, freshwater ponds and subsurface storm drains (Figure 1-2). Large amounts of surface water flow occur only during and immediately after periods of moderate to heavy rainfall. Surface water runoff from AFP 44 primarily flows to the west-northwest towards the Santa Cruz River through riverine intermittent streambed wetlands toward the Santa Cruz River (USFWS, 2017).

2.1.4 Ecological Receptors

Ecological receptors include living organisms other than humans, the habitat that supports such organisms, or natural resources that could be adversely affected by environmental contaminants from a release or migration from an identified location.

The ephemeral streams and wetlands are primary areas for potential ecological receptors, although the streams and wetlands are dry for most of the year due to the arid climate and minimal rainfall (NWS, 2017). There are several threatened and endangered species listed by United States Fish and Wildlife Services for Pima County in the State of Arizona. Except for the Pima Pineapple Cactus that is known to be present, there were no reported threatened or endangered species habitat located within the property of AFP 44. Table 2-1 lists federal species of concern that have the potential to exist with the boundaries of AFP 44 (EDR, 2017b).

3.0 FIRE TRAINING AREAS

Ayuda interviewed Mr. Wayne Cran, the RMS EHSS Manager who has been at AFP 44 for 14 years, Mr. Thomas LaSure, the RMS Fire Chief who has been at AFP 44 for 5 years, and Mr. Jim Tucker, the RMS Fire/Life Safety Engineer who has been at AFP 44 for 8 years, during the site visit on January 19, 2017 regarding current and historical fire training practices at AFP 44. Based on these interviews, it was determined that fire training exercises and spray nozzle testing involving use of AFFF are not known to have occurred on AFP 44. Communication records are in Appendix A. Site visit notes are in Appendix B.

Although there are no current FTA's at AFP 44, historical FTA's used in the 1950s and early 1960s were identified during a review of historical documents for AFP 44. These FTA's were used for fire training exercises prior to AFFF use by the USAF in 1970. In addition to interviewing RMS personnel and historical document review, Ayuda reviewed historical aerial imagery from the following sources and years in order to identify land features or activities that may indicate where AFFF was used, stored, or potentially released at AFP 44:

- Google Earth: May 1992, June 1996, April 1998, August 2002, October 2002, November 2002, September 2003, July 2004, September 2004, May 2005, July 2005, August 2005, August 2006, November 2006, December 2006, April 2007, June 2007, April 2008, November 2009, September 2010, March 2011, October 2012, November 2012, October 2013, March 2014, and November 2015, and February 2017.
- Nationwide Environmental Title Research: 1958, 1966, 1967, 1980, 1990, 1992, 1996, 2003, 2004, 2007, 2010, and 2013

This section summarizes the known operational history, waste characteristics, and the pathway and environmental hazard assessment of the FTAs based on the PA methods and sources of information.

3.1 Former North Fire Training Area

This section discusses the Former North Fire Training Area at AFP 44 (Figure 1-2).

3.1.1 Description and Operational History

The Former North Fire Training Area was located in the northeast area of AFP 44 and was used during the 1950s. The site occupied approximately one quarter-acre, with approximate geographic coordinates 32.104283 latitude and -110.935724 longitude based on the locations shown in the Installation Restoration Program Phase I-Records Search (IRP-RS) (SAIC, 1985). Fire training exercises were conducted approximately three times a week for one month a year using waste alcohols and flammable solvents, including acetone and methyl ethyl ketone. Generally, during each session, two 55-gallon drums containing these wastes were emptied onto the ground, ignited, then extinguished using carbon dioxide extinguishers and water. In addition to solvent fire training, sessions were also held involving metal and wood burning fires (SAIC, 1985). AFFF was never used to extinguish the fires since fire training in this location occurred before the initial use of AFFF by the USAF beginning in 1970. The Former North Fire Training Area is no longer used, and the exact dates of operation in the 1950s are unknown, since records documenting the training are either not available or do not exist. Historical aerial imagery was reviewed for evidence of its existence, such as training structures or burn pits, but these features could not be identified and the location of the Former North FTA could not be confirmed. Based on information contained in a 1997 Record of Decision (ROD), investigations at the Former North Fire Training Area included sampling for the presence of inorganics and organic compounds in the early 1990s. The ROD determined that No Further Action was appropriate for the Former North Fire Training Area (Waste Policy Institute [WPI], 1997). The site is currently inactive as a FTA.

3.1.2 Waste Characteristics

There is no known use of AFFF at the Former North Fire Training Area. Carbon dioxide powder and water were used to extinguish the fires during the fire training exercises at the Former North Fire Training Area.

3.1.3 Pathway and Environmental Hazard Assessment

There is no known use of AFFF or potential AFFF releases at the Former North Fire Training Area. Therefore, potential exposure pathways are incomplete.

3.1.3.1 Groundwater pathway

There is no known use of AFFF at the Former North Fire Training Area. This section is not applicable.

3.1.3.2 Surface water pathway

There is no known use of AFFF at the Former North Fire Training Area. This section is not applicable.

3.1.3.3 Soil exposure and air pathway

There is no known use of AFFF at the Former North Fire Training Area. This section is not applicable.

3.2 Former South Fire Training Area

This section discusses the former South Fire Training Area at AFP 44 (Figure 1-2).

3.2.1 Description and Operational History

The Former South Fire Training Area was the southern-most FTA at AFP 44 with approximate geographic coordinates 32.098163 latitude and -110.935834 longitude based on the locations shown in the IRP-RS (SAIC, 1985). This FTA was used for two or three years during the early 1960s. The training exercises at this location involved flow fires in which flammable liquids were discharged from a 150-gallon tank down a sloped tile drainageway into a trough. The discharged substances were subsequently ignited to create a fire. A fire engine was used to extinguish the fires, with water as the only extinguishing agent. The fluids discharged from the tank included alcohols, methyl ethyl ketone, acetone, and mixed flammable solvents. These exercises were conducted three to five times per year. The total quantity of material used during these sessions did not exceed 150 gallons. Metal and wood fires were also created for training exercises conducted at this FTA (SAIC, 1985). AFFF was never used to extinguish the fires since fire training in this location occurred before the initial use of AFFF by the USAF beginning in 1970. The Fire Training Area is no longer used, and the exact dates of operation are unknown, since records documenting the training are either not available or do not exist. Historical aerial imagery was reviewed for evidence of its existence, such as training structures or burn pits, but these features could not be identified and the location of the Former South FTA could not be confirmed. Based on information contained in a 1997 Record of Decision (ROD), investigations at the Former South Fire Training Area included sampling for the presence of inorganics and organic compounds in the early 1990s. The ROD determined that No Further Action was appropriate for the Former South Fire Training Area (WPI, 1997). The site is currently inactive and the location of the Former South Fire Training Area is shown on Figure 1-2.

3.2.2 Waste Characteristics

There is no known use of AFFF at the Former South Fire Training Area. Water was the only agent used to extinguish the fires during the fire training exercises at the Former South Fire Training Area.

3.2.3 Pathway and Environmental Hazard Assessment

There is no known use of AFFF or potential AFFF releases at the Former South Fire Training Area. Therefore, potential exposure pathways are incomplete.

3.2.3.1 Groundwater pathway

There is no known use of AFFF at the Former South Fire Training Area. This section is not applicable.

3.2.3.2 Surface water pathway

There is no known use of AFFF at the Former South Fire Training Area. This section is not applicable.

3.2.3.3 Soil exposure and air pathway

There is no known use of AFFF at the Former South Fire Training Area. This section is not applicable.

3.3 Former West Fire Training Area

This section discusses the Former West Fire Training Area at AFP 44.

3.3.1 Description and Operational History

The Former West Fire Training Area was utilized during the late 1950s at AFP 44, with approximate geographic coordinates 32.102272 latitude and -110.946471 longitude based on the locations shown in the IRP-RS (SAIC, 1985). Two months per year, small contained fires were ignited at the area on a weekly basis. These exercises used less than 5-gallons of flammable liquids for each occurrence. During these exercises, personnel were trained in the proper use of fire extinguishers. Water was also used to extinguish fires during the exercises (SAIC, 1985). AFFF was never used to extinguish the fires, since fire training in this location occurred before initial use of AFFF by the United States Air Force beginning in 1970. Historical aerial imagery was reviewed for evidence of its existence, such as training structures or burn pits, but these features could not be identified and the location of the Former West FTA could not be confirmed. Little information on previous investigations is available for the Former West Fire Training Area. However, a 2013 Environmental Baseline Survey Update Report (EGC, 2013) mentions that no contamination was found at the site (investigation date unknown) and that no further action at the site was required. The Fire Training Area is no longer used, and the exact dates of operation in the 1950s are unknown, since records documenting the training are either not available or do not exist. The site is currently inactive and the location of the Former West Fire Training Area is shown on Figure 1-2.

3.3.2 Waste Characteristics

There is no known use of AFFF at the Former West Fire Training Area. Fire extinguishers and water were used to extinguish the fires during the fire training exercises at the former West Fire Training Area.

3.3.3 Pathway and Environmental Hazard Assessment

There is no known use of AFFF or potential AFFF releases at the Former West Fire Training Area. Therefore, potential exposure pathways are incomplete.

3.3.3.1 Groundwater pathway

There is no known use of AFFF at the Former West Fire Training Area. This section is not applicable.

3.3.3.2 Surface water pathway

There is no known use of AFFF at the Former West Fire Training Area. This section is not applicable.

3.3.3.3 Soil exposure and air pathway

There is no known use of AFFF at the Former West Fire Training Area. This section is not applicable.

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4.0 NON-FIRE TRAINING AREAS

Locations that are considered non-FTAs include, but are not limited to, hangars, fire stations, AFFF storage areas, emergency response locations, and any other location where the potential exists for AFFF to have been used, stored, or potentially released into the environment. In addition to interviewing RMS personnel and historical document review, Ayuda reviewed historical aerial imagery from the following sources and years in order to identify land features or activities that may indicate where AFFF was used, stored, or potentially released at AFP 44:

- Google Earth: May 1992, June 1996, April 1998, August 2002, October 2002, November 2002, September 2003, July 2004, September 2004, May 2005, July 2005, August 2005, August 2006, November 2006, December 2006, April 2007, June 2007, April 2008, November 2009, September 2010, March 2011, October 2012, November 2012, October 2013, March 2014, and November 2015, and February 2017.
- Nationwide Environmental Title Research: 1958, 1966, 1967, 1980, 1990, 1992, 1996, 2003, 2004, 2007, 2010, and 2013.

This section summarizes the known operational history, waste characteristics, and the pathway and environmental hazard assessment of the non-FTAs identified during the January 19, 2017 site visit at AFP 44 and from resources listed in Section 1.3.

4.1 Hangars

There are no hangars at AFP 44. This section is not applicable.

4.2 Fire Stations

There is one former fire station, Building 828, at AFP 44. This section summarizes the known operational history, waste characteristics, and the pathway and environmental hazard assessment of the former fire station at AFP 44, based on interviews conducted by Ayuda during the site visit.

Appendix B contains site visit notes regarding non-FTAs discussed with RMS personnel during the site visit to AFP 44.

4.2.1 Building 828 Former Fire Station

The Building 828 Former Fire Station is located in the northcentral part of AFP 44 (Figure 1-2). The former Fire Station housed fire engines and firefighting equipment for use at AFP 44.

4.2.1.1 Description and Operational History

The Building 828 Former Fire Station was in operation from 1951 to 2015 and is located at geographic coordinates 32.104592 latitude and -110.943459 longitude. The location of the Building 828 Former Fire Station is shown on Figure 1-2. Currently, Building 828 houses a fire engine used for emergency responses at AFP 44. Currently, the fire engine does not carry AFFF but instead uses two 25-gallon water tanks for Class A and Class B fire suppression. Historically, the fire engines contained AFFF tanks starting in 2007, but have not carried AFFF since 2015 when the Tucson Fire Department took over firefighting responsibilities at AFP 44. When AFP 44 was responsible for firefighting, AFFF for the fire engines was stored in Building 828. The RMS Fire Chief mentioned that both 3% and 6% AFFF were used on the fire engines but mostly telomer-based 3% Ansulite ® or Chemguard ®, which was stored in 5-gallon buckets (LaSure, 2017a). There was no secondary containment in the building that stored the 5-gallon buckets of AFFF, but there were also no reported or observed spills that occurred according to the RMS Fire Chief (LaSure, 2017a). Based on the Site Interviews with the RMS Fire Chief and RMS EHSS (Cran, 2017), no spray testing was conducted in this area. Additionally, RMS personnel mentioned that no AFFF has been used in response to a fire at AFP 44. Currently, there is no storage of AFFF at Building 828.

4.2.1.2 Waste Characteristics

Telomer-based Ansulite 3% or Chemguard 3% AFFF was stored in fire engine tanks and 5-gallon buckets at this location. There are no known releases of AFFF at the Building 828 Former Fire Station.

4.2.1.3 Pathway and Environmental Hazard Assessment

There are no known releases of AFFF at the Building 828 Former Fire Station. This section is not applicable.

4.2.1.3.1 Groundwater pathway

There are no known releases of AFFF at the Building 828 Former Fire Station. This section is not applicable.

4.2.1.3.2 Surface water pathway

There are no known releases of AFFF at the Building 828 Former Fire Station. This section is not applicable.

4.2.1.3.3 Soil exposure and air pathway

There are no known releases of AFFF at the Building 828 Former Fire Station. This section is not applicable.

4.3 Emergency Response

There have been no known emergency responses involving use of AFFF at AFP 44. This section is not applicable.

4.4 Other Potential Sites

Other potential AFFF release areas were noted during interviews with AFP 44 personnel during the site visit, and are listed below:

- Fire Engine Wash Area,
- Fire Engine Wash Outfall,
- Building 836 Chip Yard, and
- Building 864 Fuel Barn.

This section provides descriptions of these areas and whether AFFF was used, stored, or potentially released to the environment.

4.4.1 Fire Engine Wash Area

The Fire Engine Wash Area is located immediately south of Building 828 and is a potential AFFF release area (Figure 1-2 and Figure 4-1). Geographic coordinates for Building 828 are 32.104356 latitude and -110.943451 longitude.

4.4.1.1 Description and Operational History

The RMS EHSS Manager [(Cran, 2017), Appendix B], Fire Chief [(LaSure, 2017), Appendix B], and Fire/Life Safety Engineer [(Tucker, 2017), Appendix B] stated that Building 828 is the former fire station. An asphalt paved surface containing numerous cracks immediately south and east of Building 828 is the area where fire engines were washed down after fire training exercises were conducted.

The Fire Engine Wash Area is approximately 70 feet long and 40 feet wide. Wash-water flowed over the sloped pavement and into a storm drain within the paved surface (Photograph A6). The storm drain is connected to an underground pipeline that leads to an outfall located approximately 710 feet west of the storm drain (Figure 1-2, Photograph A6). The amount of AFFF washed from the engines and into the storm drain is considered minimal, since the engines were not subject to direct application of AFFF and would have only been impacted by overspray or blowback due to change in wind direction. Its existence was noted by RMS personnel to allow Ayuda to make a complete and thorough evaluation of potential AFFF releases. The exact period and number of times the fire engines were washed in this area is unknown.

However, the fire engines have reportedly not been washed at AFP 44 after offsite fire training activities, for at least the last five years. Historically, the fire engines contained AFFF tanks starting in 2007 and ending in 2015. They have not carried AFFF since 2015 when the Tucson Fire Department took over firefighting responsibilities at AFP 44. Therefore, during the period between approximately 2012 and 2015, when AFFF was carried on the engines, the fire engines were washed at an off-site location after spray testing.

Based on discussion with the RMS Fire Chief [(LaSure, 2017), Appendix B] and RMS EHSS Manager [(Cran, 2017), Appendix B], this paved area was also where the AFFF tanks were "topped off" in the past. The RMS Fire Chief mentioned that the AFFF tanks on the fire engines were "topped off" usually with less than 5 gallons of AFFF per event. During the transfer, AFFF was manually poured from the 5-gallon buckets into the fire engine tank fill ports. Secondary containment was not used during filling activities. There are no known or reported spills of AFFF related to filling the tanks.

4.4.1.2 Waste Characteristics

An unknown volume of water was used to wash the fire trucks which, as a result of the washing, may have contained telomer-based 3% and 6% Ansulite or Chemguard AFFF overspray or blowback. This wash water drained over the cracked pavement and into the storm drain at the Fire Engine Wash Area. Washing fire engines has not occurred at AFP 44 for the last five years. Therefore, AFFF releases to the storm drain have not occurred since approximately 2012.

From the drain grate, water flows through an underground storm sewer and empties into an outfall at the head of a drainage ditch to the west (See Section 4.4.2, Fire Engine Wash Outfall).

Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes:

- A source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported),
- An exposure medium by which a receptor comes into contact, and
- A route of intake for the contaminant into the receptor's body at the exposure point.

If any of these elements are missing, the exposure pathway is incomplete.

Release mechanisms resulting in exposure media for receptors may include the uptake of contaminants by plants and animals, bioaccumulation of contaminants and mobilization through the food chain (Association of State and Territorial Solid Waste Management Officials, 2015), and the emission of soil contaminants into the air in association with dust particles (USEPA, 1989). Elements of the following pathway and environmental hazard assessment are presented in Preliminary Assessment Forms included in Appendix D. Preliminary Assessment Forms are intended to provide a checklist of potential contaminant exposure pathways identified in the "EPA Guidance for Performing Preliminary Assessments under CERCLA" (USEPA, 1991). Information included in these Forms and the following subsections are used to evaluate exposure pathways and whether a potential AFFF release poses an immediate threat to human health and the environment, and if so, whether emergency response actions are warranted.

Database research (EDR, 2017a) shows 51 day care centers, 19 medical facilities, and 23 schools within four miles from any given potential AFFF release location at AFP 44. The nearest day care center is approximately 1.75 miles downgradient of the Fire Engine Wash Area. The closest school is approximately 1.8 miles to the northeast of the Fire Engine Wash Area. A middle school is located approximately 2.15

miles to the northwest, downgradient from the Fire Engine Wash Area. No schools or day care centers are located on the AFP 44 installation.

4.4.1.2.1 Groundwater pathway

The AFP 44 water is supplied by the City of Tucson (Tucson Water) from approximately 200 groundwater wells located in and around the Tucson metropolitan area (Tucson Water, 2016), which includes wells within 4 miles of the Fire Engine Wash Area. Excess supply water is routed to reservoirs for use elsewhere in the system. Approximately 90% of the supplied drinking water is a blend of groundwater and Colorado River water supplied by the Central Arizona Project which is used to recharge the groundwater. Water delivered by Tucson Water is regularly monitored for the presence of PFOS and perfluoro 1-hexanesulfonic Acid (Tucson Water, 2017). However, there are some residences in the area which may use private wells for drinking or irrigation purposes (Office of Environmental Health, 2000). According to the ADWR (ADWR, 2017) there are 296 exempt and 321 non-exempt groundwater wells within 4 miles of the Fire Engine Wash Area in the general downgradient direction to the northwest. Exempt wells are classified by the Arizona Department of Natural Resources (ADNR) as, generally, non-irrigation wells with a maximum pumping capacity of 35 gallons per minute or less (ADNR, 2017). Non-exempt wells are those with greater than 35 gpm pumping capacity. Exempt and non-exempt wells can be privately or publicly owned and, while their function is not directly specified in well records, they may serve as drinking or irrigation water sources. Other wells exist within four miles downgradient of the Fire Engine Wash Area, but their presence and purpose are either unrelated to drinking water sources (monitoring wells, injection wells, vadose zone wells, etc.) or unknown.

The nearest publicly-owned (City of Tucson) non-exempt well downgradient is located approximately 3.5 miles northwest of the area. There is the potential for AFFF released to the surface at the Fire Engine Wash Area to impact groundwater in this area although the depth to groundwater is approximately 120 ft bgs at AFP 44. The nearest downgradient exempt well is located approximately 0.3 miles downgradient of the Fire Engine Wash Area.

There is a potential for an exposure pathway via groundwater. Some of the wells within 4.0 miles of the Fire Engine Wash Area are located hydraulically downgradient of the potential AFFF release area. The City of Tucson monitors PFASs in drinking water under UCMR3 (USEPA, 2017). PFOS was detected in a sample collected on April 16, 2013 and a sample collected on November 20, 2013. UCMR3 analytical information is available through the USEPA webpage.

4.4.1.2.2 Surface water pathway

Wash water captured by the drain at the Fire Engine Wash Area flows through an underground culvert and empties into an outfall at the head of a drainage ditch to the west. Section 4.4.2, Fire Engine Wash Outfall, discusses the surface water exposure pathway from this point. Because the fire engine wash water would be washed into the drain and any storm events would also flow to this drain, there is not a surface water release point at the wash area independent of the flow to the Fire Engine Wash Outfall discussed in Section 4.4.2.

4.4.1.2.3 Soil Exposure and Air Pathway

The Fire Engine Wash Area is on asphalt. There is the potential for wash water to infiltrate through cracks in the asphalt and impact the soil beneath the asphalt. However, current land use at this site does not involve any human health exposures and future land use is likely to remain unchanged.

The nearest residential area is approximately 1.4 miles northwest of the site. The nearest school is approximately 1.8 miles northeast of the site in a residential area. The nearest day care center is

approximately 1.75 miles downgradient of the Fire Engine Wash Area. Because the Fire Engine Wash area is paved and fire truck rinse water potentially containing AFFF is washed into the drain, the potential for an air pathway for human exposure at residences or at schools or day care facilities is very low.

4.4.2 Fire Engine Wash Outfall

The Fire Engine Wash Outfall, located at 32.10423 latitude and -110.945703 longitude, is a potential AFFF release area. The Fire Engine Wash Outfall is shown on Figures 1-2 and Figure 4-1.

4.4.2.1 Description and Operational History

The Fire Engine Wash Outfall is approximately 710 feet west of the Fire Engine Wash Area. Operations at the Fire Engine Wash Area are described in Section 4.4.1.1. The outfall is an unpaved and unlined area that is the beginning of a drainage ditch that runs approximately 0.4 miles west before it empties into an ephemeral stream that continues northwest and enters a drainage culvert underneath the South Nogales Highway and eventually empties into the Santa Cruz River approximately three miles downstream. There is a shallow depression at the mouth of the outfall that acts as a retention basin for any drainage (Photographs A1 and A6 in Appendix C, are of the Fire Engine Wash Outfall). Based on discussion with the RMS EHSS Manager [(Cran, 2017), Appendix B], the wash water usually remains in the depression until it evaporates, since inflow is usually insufficient to flow through the drainage ditch and offsite, except during periods of moderate to heavy rainfall.

4.4.2.2 Waste Characteristics

As described in Section 4.4.1.1, an unknown volume of water containing telomer-based 3% and 6% Ansulite or Chemguard AFFF was washed into the storm drain at the Fire Engine Wash Area and into the Fire Engine Wash Outfall. Washing fire engines has not occurred at AFP 44 for the last five years. Therefore, AFFF releases to this outfall have not occurred during that time.

4.4.2.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes:

- A source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported),
- An exposure medium by which a receptor comes into contact, and
- A route of intake for the contaminant into the receptor's body at the exposure point.

If any of these elements are missing, the pathway is incomplete. Release mechanisms resulting in exposure media for receptors may include the uptake of contaminants by plants and animals, bioaccumulation of contaminants and mobilization through the food chain (Association of State and Territorial Solid Waste Management Officials, 2015), and the emission of soil contaminants into the air in association with dust particles (USEPA, 1989). Elements of the following pathway and environmental hazard assessment are presented in Preliminary Assessment Forms included in Appendix D. Preliminary Assessment Forms are intended to provide a checklist of potential contaminant exposure pathways identified in the "EPA Guidance for Performing Preliminary Assessments under CERCLA" (USEPA, 1991). Information included in these Forms and the following subsections are used to evaluate exposure pathways and whether a potential AFFF release poses an immediate threat to human health and the environment, and if so, whether emergency response actions are warranted.

Database research (EDR, 2017c) shows 51 day care centers, 19 medical facilities, and 23 schools within four miles from any given potential AFFF release location at AFP 44. The nearest day care center is approximately 1.6 miles downgradient of the Fire Engine Wash Outfall. The closest school is approximately 1.9 miles to the northeast of the Fire Engine Wash Outfall. A middle school is located approximately 2

miles to the northwest, downgradient from the Fire Engine Wash Outfall. No schools or day care centers are located on the AFP 44 installation.

4.4.2.3.1 Groundwater pathway

The Tucson and AFP 44 water supply comes the City of Tucson (Tucson Water) from approximately 200 groundwater wells located in and around the Tucson metropolitan area (Tucson Water, 2016), which includes wells within 4 miles of the Fire Engine Wash Outfall. Excess supply water is routed to reservoirs for use elsewhere in the system. Approximately 90% of the supplied drinking water is a blend of groundwater and Colorado River water supplied by the Central Arizona Project which is used to recharge the groundwater. Water delivered by Tucson Water is regularly monitored for the presence of PFOS and perfluoro 1-hexanesulfonic Acid (Tucson Water, 2017). However, there are some residences in the area which may use private wells for drinking or irrigation purposes (Office of Environmental Health, 2000). According to the ADWR (ADWR, 2017) there are 295 exempt and 322 non-exempt groundwater wells within 4 miles of the Fire Engine Wash Outfall in the general downgradient direction to the northwest. Exempt wells are classified by the ADNR as, generally, non-irrigation wells with a maximum pumping capacity of 35 gallons per minute or less (ADNR, 2017). Non-exempt wells are those with greater than 35 gpm pumping capacity. Exempt and non-exempt wells can be privately or publicly owned and, while their function is not directly specified in well records, they may serve as drinking or irrigation water sources. Other wells exist within four miles downgradient of the outfall, but their presence and purpose are either unrelated to drinking water sources (monitoring wells, injection wells, vadose zone wells, etc.) or unknown.

The nearest publicly-owned (City of Tucson) non-exempt well downgradient is located approximately 3.6 miles northwest of the Fire Engine Wash Outfall. There is the potential for AFFF released to the surface at the Fire Engine Wash Outfall to impact groundwater in this area although the depth to groundwater is approximately 120 ft bgs at AFP 44. The nearest downgradient exempt well is located approximately 0.21 miles downgradient of the Fire Engine Wash Outfall.

There is a potential for an exposure pathway via groundwater. Some of the wells within 4.0 miles of the Fire Engine Wash Outfall are located hydraulically downgradient of the potential AFFF release area. The City of Tucson, which supplies drinking water to AFP 44, monitored for PFASs under UCMR3 (USEPA, 2017). PFOS was detected in a sample collected on April 16, 2013 and a sample collected on November 20, 2013. UCMR3 analytical information is available through the USEPA webpage.

4.4.2.3.2 Surface water pathway

When sufficient water is present, surface water from the Fire Engine Wash Outfall flows west along the drainage ditch that enters an ephemeral stream approximately 0.4 miles downstream that flows towards South Nogales Highway (Figure 1-2). Natural surface waters in the site area are intermittent and occur primarily as runoff from storm events.

Near AFP 44, surface water drainage consists of ephemeral streams, drainage channels, and subsurface storm drains. Large amounts of surface water flow occur only during and immediately after periods of moderate to heavy rainfall. Surface water runoff from the vicinity of the Fire Engine Wash Outfall flows to the west through the drainage channel and then west northwest through approximately three miles of riverine ephemeral streambed wetlands toward the Santa Cruz River. The Santa Cruz River flows north and consists of riverine ephemeral streambed wetlands, which is otherwise dry most of the year, and includes some freshwater pond wetlands (USFWS, 2017). Surface water may recharge the aquifer in areas

where it collects and infiltrates in large quantities such as along the ephemeral streams and unlined sections of drainage channels (Graham and Monical, 1997).

Migration of surface water contamination downstream is possible during rainstorm events. Based on discussion with Rene Gomez, Pima County Water Public Water Systems Compliance Inspector, Pima County gets most of its drinking water from the Central Arizona Project diversion canal, an aqueduct that diverts water from the Colorado River (Gomez, 2017). There are no known municipal drinking water intakes along the surface water within 15 miles downstream of the Fire Engine Wash Outfall. While searched resources did not specify the existence of surface drinking water intakes, surface water contamination could provide an exposure pathway to human receptors if they are present. A potential exposure pathway to ecological receptors could exist if surface water travels through the nearby riverine or freshwater pond wetlands.

Surface water within 15 miles downstream of the Fire Engine Wash Outfall is intermittent and is not a likely source for recreational fishing. Recreational fishing on the Santa Cruz River is not allowed, therefore if AFFF releases were to enter the Santa Cruz River, it is unlikely that such a pathway would result in a threat to human health and the environment.

4.4.2.3.3 Soil exposure and air pathway

The Fire Engine Wash Outfall area consists of native soils with little vegetation and follows the drainage ditch to the west. Current land use does not involve any human health exposures and future land use is likely to remain unchanged.

The nearest residential area is approximately 1.3 miles northwest of the site. The nearest school is approximately 1.9 miles northeast of the site in a residential area. The nearest day care center is approximately 1.6 miles downgradient of the Fire Engine Wash Outfall. The potential for an air pathway for human exposure at residences or at schools or day care facilities is low.

4.4.3 Building 836 Chip Yard

The Building 836 Chip Yard is an area where AFFF that is used in the fire suppression system at Building 864 is stored. The location of the Building 836 Chip Yard is shown on Figure 1-2.

4.4.3.1 Description and Operational History

AFFF is stored under a metal canopy on a paved surface and is within secondary containment at the Building 836 Chip Yard, located at geographic coordinates 32.103041 latitude and - 110.943222 longitude. Within the storage area are four totes (275-gallon-capacity portable plastic tanks), each of which contain 265 gallons of telomer-based 3% Ansulite AFFF. There are also five 55-gallon drums and four 5-gallon containers of telomer-based 3% Ansulite AFFF. Total volume of telomer-based 3% Ansulite AFFF stored at the site is 1,355 gallons, according to an inventory check conducted 01 January 2017 (Pence, 2017). No other requested purchasing records, storage documents, or records of the AFFF use were available. Historical storage of other types of AFFF at Building 836 is unknown. The date of first storage of AFFF at this location is also unknown. AFFF is transported to the Building 836 Chip Yard via private trucking company and unloaded at the site. Raytheon manages movement of AFFF from the Building 836 Chip Yard to Building 864, where it is pumped into the fire suppression AFFF holding tank, as discussed in Section 4.4.3. There are no records or other evidence of spills in this area related to delivery, storage, or transport of AFFF to Building 864.

4.4.3.2 Waste Characteristics

There are no records or other evidence to indicate that there has ever been a release of AFFF in this area. This section is not applicable.

4.4.3.3 Pathway and Environmental Hazard Assessment

There are no records or other evidence to indicate that there has ever been a release of AFFF in this area. This section is not applicable.

4.4.3.3.1 Groundwater pathway

There are no records or other evidence to indicate that there has ever been a release of AFFF in this area. This section is not applicable.

4.4.3.3.2 Surface water pathway

There are no records or other evidence to indicate that there has ever been a release of AFFF in this area. This section is not applicable.

4.4.3.3.3 Soil exposure and air pathway

There are no records or other evidence to indicate that there has ever been a release of AFFF in this area. This section is not applicable.

4.4.4 Building 864 Fuel Barn

The northeast portion of Building 864 is an area that is referred to as the "Fuel Barn". The Building 864 Fuel Barn is equipped with a fire suppression system that uses telomer-based 3% Ansulite AFFF. The Building 864 fuel barn is shown on Figure 1-2 and Figure 4-1.

4.4.4.1 Description and Operational History

The Building 864 Fuel Barn is located at 32.094791 latitude and -110.926586 longitude. The Fuel Barn is equipped with a fire suppression system that uses telomer-based 3% Ansulite AFFF. Monthly, quarterly, semi-annual, and annual performance monitoring tests are conducted on the fire suppression system. Approximately 20 gallons of AFFF are discharged annually during the tests. The PA Team was not allowed access to the Fuel Barn in Building 864 during the site visit, but based on a description provided by the RMS EHSS Manager, there is a floor drain that collects fluid from inside Building 864 which empties into an enclosed, lined sump on the eastern side of Building 864. After the sump receives liquid from Building 864, a vacuum truck from a private vendor is used to remove the contents of the sump, which are then transported to an offsite facility for disposal. According to the RMS EHSS [(Cran, 2017), Appendix B], there has never been a fire inside the Fuel Barn requiring use of AFFF. There are no records or other evidence of spills related to testing or vacuum truck pumping activities at the Building 864 AFFF fire suppression system or sump. However, it is possible that AFFF was released to the environment through cracks in the building drainage system, if they exist, or the associated sump during performance monitoring tests.

A vertical above ground steel holding tank that supplies AFFF to the fire suppression system is located outside the east side of Building 864 (see Appendix C for photographs). RMS personnel explained that monthly tests of tank pressure and volume are performed on the tank. There are no records that AFFF was released during the tests (note that the hoses shown in Photographs A4 and A5 in Appendix C are connected to the bladder pressure system and not to an AFFF outlet. According to Raytheon Facilities Management, there are no records of any pressure tank failures. However, the frequency of pressure tank testing was not specified. By design, AFFF is prevented from being released to the environment because the hoses are connected to the bladder pressure system, and not to the bladder containing AFFF. Replenishment of the AFFF holding tank after testing is from supplies stored at the Building 836 Chip Yard (Section 4.4.3). Replenishment is accomplished by pumping AFFF into the system from totes that have been transported from the Building 836 Chip Yard. Ayuda did not observe any evidence of spills at this location, such as staining, puddling, or slick surfaces due to residual AFFF. Although there was no evidence of a spill or records to support this evidence, it is possible that AFFF has been released to the environment during system testing. The Building 864 Fuel Barn, AFFF holding tank, and sump are shown on Figure 1-2.

4.4.4.2 Waste Characteristics

Telomer-based Ansulite 3% AFFF was used in the fire suppression system at Building 864. There are no known records or other evidence to indicate that there has ever been a spill related to AFFF use in this area. However, it is possible that AFFF has been released to the environment from the holding tank, sump, or floor drains associated with the fire suppression system at the Building 864 Fuel Barn.

4.4.4.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes:

- A source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported),
- An exposure medium by which a receptor comes into contact, and
- A route of intake for the contaminant into the receptor's body at the exposure point.

If any of these elements are missing, the pathway is incomplete. Release mechanisms resulting in exposure media for receptors may include the uptake of contaminants by plants and animals, bioaccumulation of contaminants and mobilization through the food chain (Association of State and Territorial Solid Waste Management Officials, 2015), and the emission of soil contaminants into the air in association with dust particles (USEPA, 1989). Elements of the following pathway and environmental hazard assessment are presented in Preliminary Assessment Forms included in Appendix D. Preliminary Assessment Forms are intended to provide a checklist of potential contaminant exposure pathways identified in the "EPA Guidance for Performing Preliminary Assessments under CERCLA" (USEPA, 1991). Information included in these Forms and the following subsections are used to evaluate exposure pathways and whether a potential AFFF release poses an immediate threat to human health and the environment, and if so, whether emergency response actions are warranted.

Database research (EDR, 2017c) shows 51 day care centers, 19 medical facilities, and 23 schools within four miles from any given potential AFFF release location at AFP 44. The nearest day care center is approximately 2.9 miles downgradient of the Building 864 Fuel Barn. The closest school is approximately 2.2 miles to the southeast of the Building 864 Fuel Barn. No schools or day care centers are located on the AFP 44 installation.

4.4.4.3.1 Groundwater pathway

The Tucson and AFP 44 water supply comes the City of Tucson (Tucson Water) from approximately 200 groundwater wells located in and around the Tucson metropolitan area (Tucson Water, 2016), which includes wells within 4 miles of the Building 864 Fuel Barn. Excess supply water is routed to reservoirs for use elsewhere in the system. Approximately 90% of the supplied drinking water is a blend of groundwater and Colorado River water supplied by the Central Arizona Project which is used to recharge the groundwater. Water delivered by Tucson Water is regularly monitored for the presence of PFOS and perfluoro 1-hexanesulfonic Acid (Tucson Water, 2017). However, there are some residences in the area which may use private wells for drinking or irrigation purposes (Office of Environmental Health, 2000). According to the ADWR (ADWR, 2017) there are 301 exempt and 284 non-exempt groundwater wells within 4 miles of the Building 864 Fuel Barn in the general downgradient direction to the northwest. Exempt wells are classified by ADNR as, generally, non-irrigation wells with a maximum pumping capacity of 35 gallons per minute or less (ADNR, 2017). Non-exempt wells are those with greater than 35 gpm pumping capacity. Exempt and non-exempt wells can be privately or publicly owned and, while their function is not directly specified in well records, they may serve as drinking or irrigation water sources. Other wells exist within four miles downgradient of the outfall, but their presence and purpose are either unrelated to drinking water sources (monitoring wells, injection wells, vadose zone wells, etc.) or unknown.

The nearest publicly-owned (City of Tucson) non-exempt well downgradient is located approximately 4.6 miles northwest of the Building 864 Fuel Barn. There is the potential for AFFF released to the surface at the Building 864 Fuel Barn to impact groundwater in this area, although the depth to groundwater is approximately 120 ft bgs at AFP 44. The nearest downgradient exempt well is located approximately 0.3 miles from the Building 864 Fuel Barn.

There is a potential for an exposure pathway via groundwater. Some of the wells within 4.0 miles of the Building 864 Fuel Barn are located hydraulically downgradient of the potential AFFF release area.

4.4.4.3.2 Surface water pathway

When sufficient water is present, surface water from the Building 864 Fuel Barn flows southwest until it enters an ephemeral stream and flows west northwest for approximately 2.4 miles to the AFP 44 property boundary towards South Nogales Highway (Figure 1-2). Natural surface waters in the site area are intermittent and occur primarily as runoff from storm events.

Near AFP 44, surface water drainage consists of ephemeral streams, drainage channels, and subsurface storm drains. Large amounts of surface water flow occur only during and immediately after periods of moderate to heavy rainfall. Surface water runoff from the vicinity of the Building 864 Fuel Barn flows southwest until it enters an ephemeral stream and flows west northwest through approximately 4.7 miles of riverine ephemeral streambed wetlands toward the Santa Cruz River. The Santa Cruz River flows north and consists of riverine ephemeral streambed wetlands, which is otherwise dry most of the year, and includes some freshwater pond wetlands (USFWS, 2017). Surface water may recharge the aquifer in areas where it collects and infiltrates in large quantities such as along the ephemeral streams and unlined sections of drainage channels (Graham and Monical, 1997).

Migration of surface water contamination downstream is possible during rainstorm events. Based on discussion with Rene Gomez, Pima County Water Public Water Systems Compliance Inspector, Pima County gets most of its drinking water from the Central Arizona Project diversion canal, an aqueduct that diverts water from the Colorado River (Gomez, 2017). There are no known municipal drinking water intakes along the surface water within 15 miles downstream of the Building 864 Fuel Barn. While searched resources did not specify the existence of surface drinking water intakes, surface water contamination could provide an exposure pathway to human receptors if they are present. A potential exposure pathway to ecological receptors could exist if surface water travels through the nearby riverine or freshwater pond wetlands.

Surface water within 15 miles downstream of the Building 864 Fuel Barn is intermittent, and is not a likely source for recreational fishing. Recreational fishing on the Santa Cruz River is not allowed, therefore if AFFF releases were to enter the Santa Cruz River, it is unlikely that such a pathway would result in a threat to human health and the environment.

4.4.4.3.3 Soil exposure and air pathway

The Building 864 Fuel Barn area consists of native soils with little vegetation and follows the drainage ditch to the west. Current land use does not involve any human health exposures and future land use is likely to remain unchanged.

The nearest residential area is approximately 1.37 miles south of the site. The closest school is approximately 2.2 miles to the southeast of the site in a residential area. The nearest day care center is approximately 2.9 miles downgradient of the Building 864 Fuel Barn. The potential for an air pathway for human exposure at residences or at schools or day care facilities is low.

5.0 SUMMARY AND CONCLUSIONS

5.1 Summary

5.1.1 Fire Training Areas

5.1.1.1 Fire Training Areas Closed Prior to 1970

On-site FTAs closed prior to 1970 and therefore did not use AFFF for fire training activities (See Section 1.2) and are not considered to have been impacted by PFOA or PFOS from AFFF use. The former North FTA, former South FTA, and former West FTA were closed prior to 1970. Therefore, there are no suspected AFFF-related impacts to human health or the environment related to FTAs at AFP 44.

5.1.1.2 Fire Training Areas Operational After 1970

FTAs used after 1970 may contain PFOA- and PFOS-impacted media. There were no FTAs operational after 1970 at AFP 44, therefore, there are no suspected AFFF-related impacts to human health or the environment from FTAs at AFP 44.

5.1.1.3 Current Fire Training Areas

There are no current FTAs at AFP 44.

5.1.2 Non-Fire Training Areas

5.1.2.1 Hangars

There are no hangars at AFP 44.

5.1.2.2 Fire Stations

There are no fire stations currently at AFP 44. There is one fire engine onsite that is housed at Building 828 and used for emergency response at AFP 44. The Fire Engine does not carry AFFF, but has two 25 gallon water tanks for Class A and Class B fire suppression.

There is one former fire station, Building 828, at AFP 44. Historically, the fire engines contained AFFF tanks starting in 2007, but have not carried AFFF since the Tucson Fire Department took over firefighting responsibilities at AFP 44 in 2015. When AFP 44 was responsible for firefighting responsibilities, AFFF was stored in Building 828 where both telomer-based 3% and 6% AFFF were used on the fire engines but mostly 3% Ansulite or Chemguard, which was stored in 5-gallon buckets. There was no secondary containment in the building that stored the 5-gallon buckets of AFFF, but there were also no reported or observed spills that occurred according to the RMS Fire Chief. There is no evidence of AFFF spills or releases to the environment at this location.

5.1.2.3 Emergency Response

No emergency responses involving use of AFFF have taken place at AFP 44.

5.1.2.4 Other Potential Sites

At the Fire Engine Wash Area, an unknown volume of water containing telomer-based 3% and 6% Ansulite or Chemguard AFFF may have infiltrated into cracks in the pavement as wash water flowed toward the storm drain. However, fire engines have not been washed at AFP 44 for the last five years and AFFF releases to this outfall have not occurred since approximately 2012.

The Fire Engine Wash Outfall is the location where the wash water from the Fire Engine Wash Area drained. Water containing 3% AFFF was washed into the storm drain after washing the fire engines of residual AFFF overspray after fire training exercises. While the exact quantity of AFFF that drained to this location is unknown, the amount is suspected to be minimal, since the source of the water flowing to the

Outfall is from fire engine washing. The fire engines were not subject to direct application of AFFF, and would have only been impacted by overspray or blowback due to change in wind direction.

At the Building 864 Fuel Barn, although records or evidence of a spill do not exist, it is possible that AFFF may have been released to the environment from the holding tank, sump, or floor drains as a result of performance testing of the fire suppression system.

The potential exists for a release of AFFF on AFP 44 property at the Fire Engine Wash Area, the Fire Engine Wash Outfall, and the Building 846 Fuel Barn. There is also the potential for an exposure pathway via groundwater and surface water for AFFF released from these areas. There are several wells within 4 miles hydrogeologically downgradient of the potential AFFF release areas.

Surface water within 15 miles downstream of these potential AFFF release areas is not known to provide municipal drinking water. However, the potential for migration of surface contamination downstream exists, which could provide an exposure pathway for humans. There also exists a potential exposure pathway to ecological receptors along ephemeral streambeds and associated wetlands.

5.2 Limitations

Limitations associated with the results of this PA are a function of the uncertainty associated with information sources. Limitations of the report include:

- Record Research: The research conducted for this PA was limited to information, including reports, database records, and other files available through the Administrative Record (if available), on the internet, and/or provided by interviewees.
- Database Searches: The accuracy and completeness of database searches, of both independent and State-operated databases, were limitations of this PA Report. Database resources were not always up to date with accurate information. Consistency of information between databases was conflicting. State well database queries sometimes lacked descriptive properties of well completions and did not always define a well's intended use (i.e. drinking water, irrigation, agricultural, monitoring, etc.) Furthermore, not all private wells were identified in databases.
- Interviews: Much of the information presented in this report is based on personal communication and represents the viewpoints of individuals interviewed. These viewpoints are limited to the time span and memories of a given individual, gaps in time or memory could result in information on AFFF storage and usage not being presented in this report. Personnel interviewed at the installation may not have been stationed there throughout the period in which AFFF was used at the site or present on the installation during specific potential release events. Additionally, PFOA and PFOS are emerging contaminants, and the health and environmental impacts of these compounds have only recently been discovered. Because of this recent awareness, the Air Force does not have the same detailed records regarding the storage,: handling, and release as for other substances used by the Air Force.
- Aerial Photograph Review: This review was limited to available digital aerial photographs on Google Earth and/or NETR online. The review of the aerial photographs was limited by the number of images available from past years, as well as the resolution of the images.
- Accuracy or completeness of records and inventories of AFFF quantities used or stored; and
- Pathway Evaluation: The completion of the "Preliminary Assessment Form" was limited by the information attained during the records review, interviews with installation personnel, and review of aerial photographs.

5.3 Conclusions

Table 5-1 summarizes the findings from this PA report and presents the possible future management decisions on the identified locations. These locations were initially identified as areas of possible AFFF

release to the environment. In accordance with the USEPA CERCLA PA and site inspections guidance documents (USEPA, 1991) each of the identified locations is either recommended for implementation of a removal action due to immediate threat; initiation of a Remedial Investigation, initiation of a site inspection, or close out of the identified location due to no release. Each recommendation is defined below, and whether it is applicable to conditions at AFP 44:

- Removal actions, as defined in CERCLA Section 104, are actions taken to eliminate, control, or otherwise mitigate a threat posed to public health or the environment from a release or threatened release of hazardous substances (USEPA, 1991). Because there is no imminent threat associated with PFAS, removal actions are not required at AFP 44.
- Site inspection is defined as an investigation to collect and analyze waste and environmental samples to support a site evaluation (USEPA, 1992). A Site Inspection has been recommended to sample both soil and groundwater, at the following AFP 44 sites:
  - Fire Engine Wash Area,
  - Fire Engine Wash Outfall, and
  - Building 864 Fuel Barn;
- Close out or no further remedial action planned is defined as a site disposition decision that further response under the Federal Superfund Act is not necessary (USEPA, 1991). Close out has been recommended for 5 sites identified at AFP 44.

None of the sites investigated during this PA were identified as presenting an immediate risk to public health or the environment based on the information contained within this PA report. This assessment will be revisited as necessary based on the SI findings.

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FIGURES

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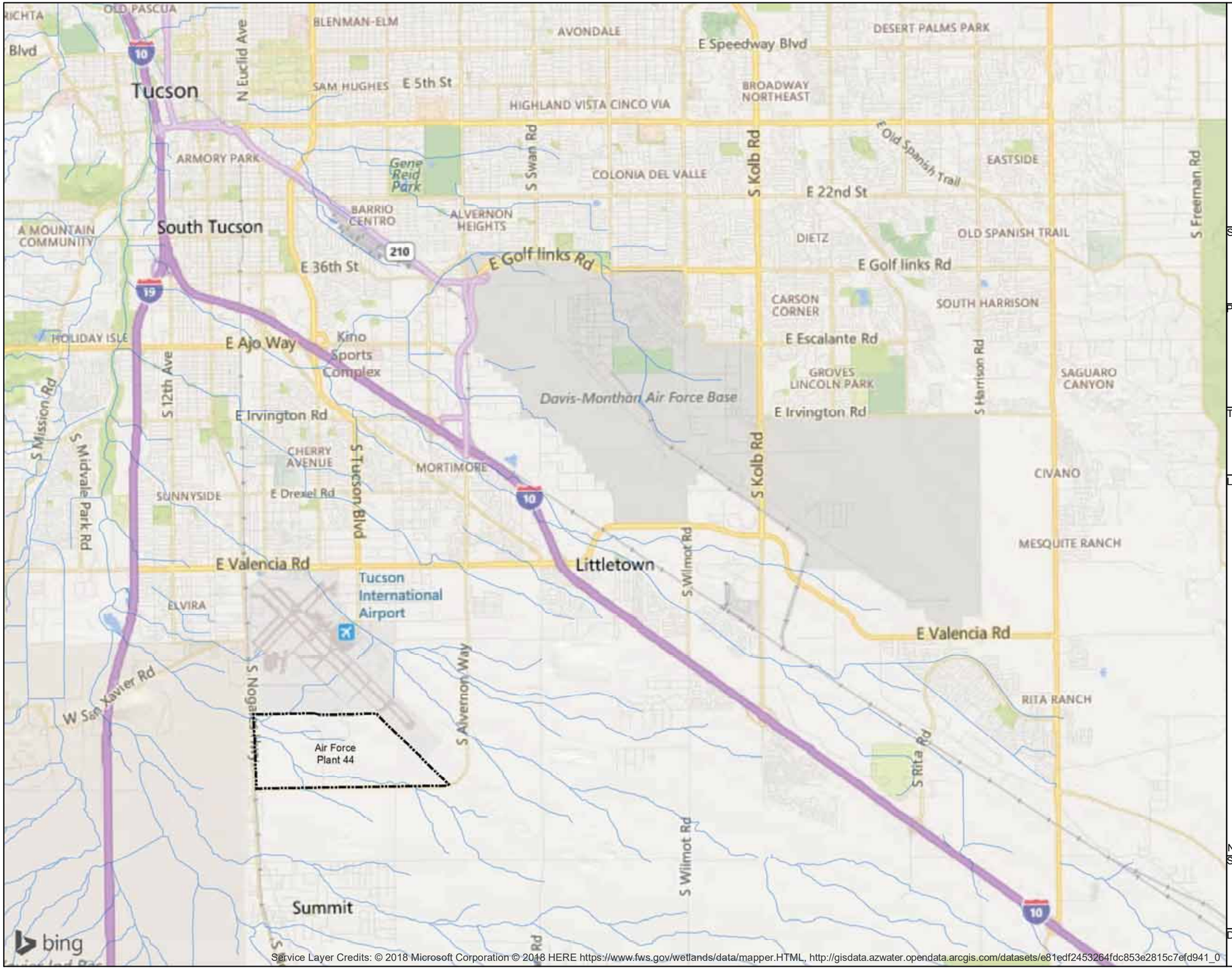

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Ayuda

Ayuda Companies
410 Acoma Street, Suite A
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U.S. Army Corps of Engineers
Omaha District

SITE:

UNITED STATES
AIR FORCE PLANT 44
TUCSON, AZ

PROJECT:

PRELIMINARY ASSESSMENT REPORT

AQUEOUS FILM-FORMING FOAM AREAS

TITLE:

AIR FORCE PLANT 44
SITE LOCATION

LEGEND:

- # Air Force Plant 44
- Air Force Plant 44 Installation Boundary
- NHD Rivers and Streams

NHD = National Hydrography Dataset

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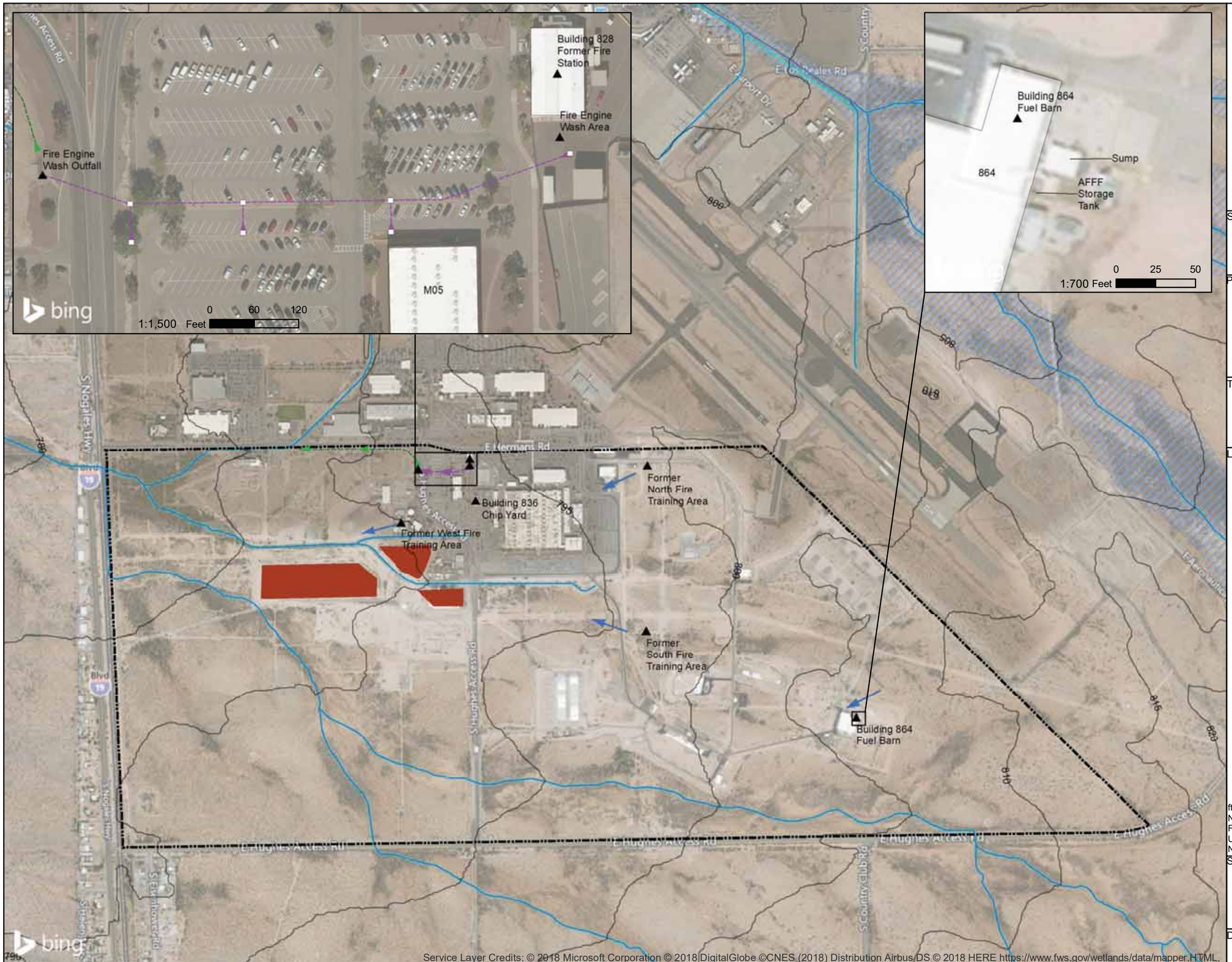

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U.S. Army Corps of Engineers
Omaha District

SITE:
UNITED STATES
AIR FORCE PLANT 44
TUCSON, AZ

PROJECT:
PRELIMINARY ASSESSMENT
REPORT

AQUEOUS FILM-FORMING
FOAM AREAS

TITLE:
AIR FORCE PLANT 44 LAYOUT
AND LOCATIONS IDENTIFIED
FOR ASSESSMENT

LEGEND:

- # Locations Identified for Assessment
- Air Force Plant 44 Installation Boundary
- Topographic Elevation Contours (ft amsl) USGS NED
- NHD Rivers and Streams
- Drainage Ditch
- Stormwater Culvert
- Arizona Wetland
- Former Waste Water Holding Pond
- Local Surfacewater Flow Direction
- Storm Drain

FEMA National Flood Hazard Layer

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Reduced Risk Due to Levee
- Area of Undetermined Flood Hazard

e Regional Groundwater Flow Direction (northwest) (EDR, 2017)

ft amsl = feet above mean sea level
NHD = National Hydrography Dataset
FEMA = Federal Emergency Management Agency
USGS = United States Geological Survey
NED = National Elevation Dataset

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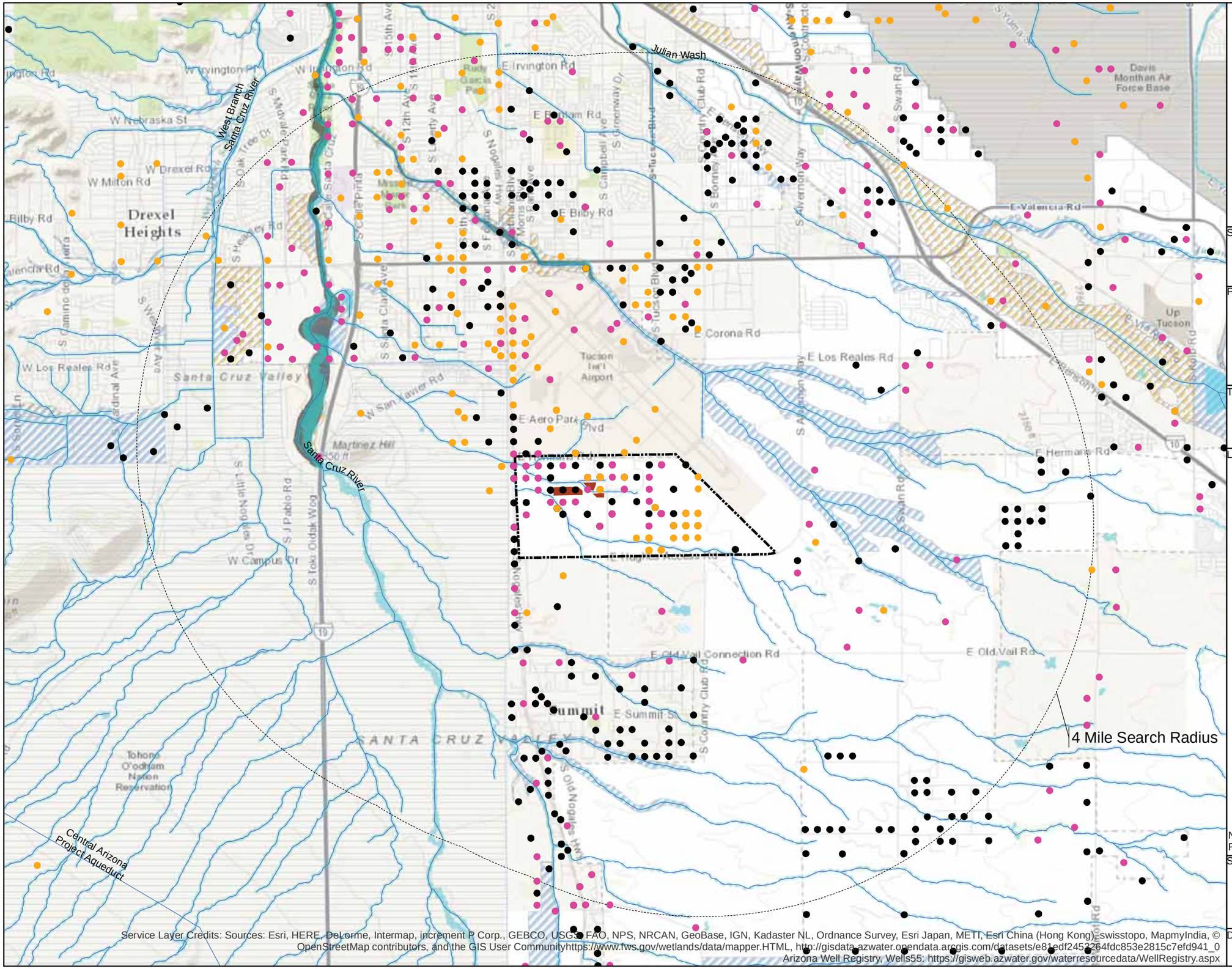

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Omaha District

SITE:
UNITED STATES
AIR FORCE PLANT 44
TUCSON, AZ

PROJECT:
PRELIMINARY ASSESSMENT
REPORT

AQUEOUS FILM-FORMING
FOAM AREAS

TITLE:
ARIZONA WELL REGISTRY
DOMESTIC WELLS
AND FEMA FLOOD HAZARDS

LEGEND:

Arizona Well Registry
- Exempt
- Non-exempt
- Other

FEMA National Flood Hazard Layer
- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Reduced Risk Due to Levee
- Area of Undetermined Flood Hazard
- Regulatory Floodway

- Former Waste Water Holding Pond
- 4 Mile Search Radius
- Air Force Plant 44 Installation Boundary
- NHD Rivers and Streams
- Arizona Wetland

- Regional Groundwater Flow Direction (northwest) (EDR, 2017)

NHD = National Hydrography Dataset
FEMA = Federal Emergency Management Agency

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Miles
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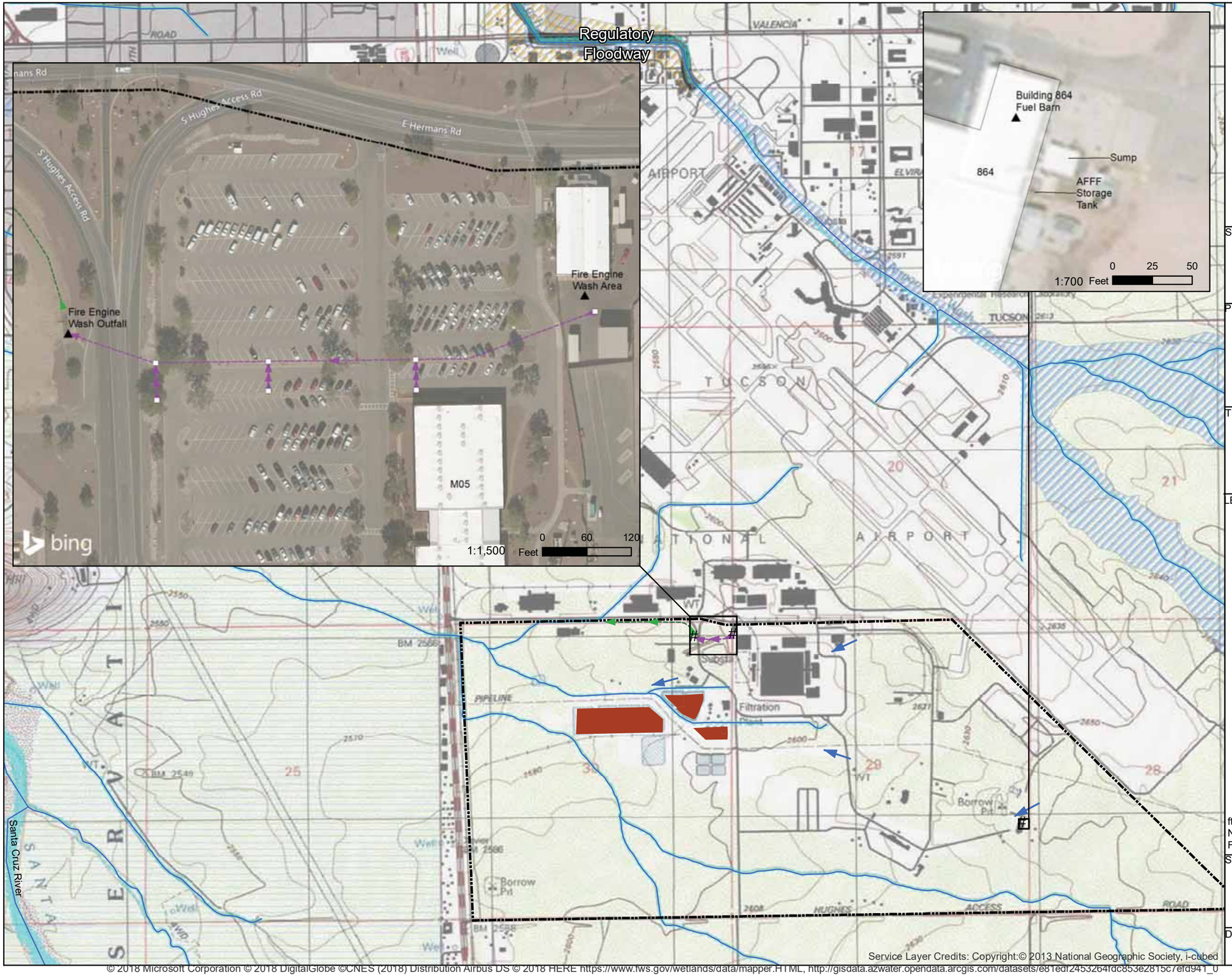

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U.S. Army Corps of Engineers
Omaha District

SITE:
UNITED STATES
AIR FORCE PLANT 44
TUCSON, AZ

PROJECT:
PRELIMINARY ASSESSMENT
REPORT

AQUEOUS FILM-FORMING
FOAM AREAS

TITLE:
LOCATIONS IDENTIFIED
FOR SITE INSPECTION,
FIRE ENGINE WASH AREA,
FIRE ENGINE WASH OUTFALL,
AND BUILDING 864 FUEL BARN

LEGEND:

- # Locations Identified for Site Inspection
- Air Force Plant 44 Installation Boundary
- NHD Rivers and Streams
- Drainage Ditch
- Stormwater Culvert
- Arizona Wetland
- Former Waste Water Holding Pond
- Local Surfacewater Flow Direction
- Storm Drain

FEMA National Flood Hazard Layer

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Reduced Risk Due to Levee
- Area of Undetermined Flood Hazard
- Regulatory Floodway

- e Regional Groundwater Flow Direction (northwest) (EDR, 2017)

ft amsl = feet above mean sea level
NHD = National Hydrography Dataset
FEMA = Federal Emergency Management Agency

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Feet
NAD 1983 StatePlane Arizona Central FIPS 0202 Feet

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ADS	3/16/2018 REV: 0	4-1

TABLES

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Table 1-1 Fire Training Areas and Non-Fire Training Areas Identified for Potential Aqueous Film-Forming Foam Releases at Air Force Plant 44 Tucson, Arizona

Fire Training Areas
Former North Fire Training Area
Former South Fire Training Area
Former West Fire Training Area
Non-Fire Training Areas
Hangars
None
Fire Stations
Building 828 Former Fire Station
Emergency Response
None
Other Sites
Fire Engine Wash Area
Fire Engine Wash Outfall
Building 836 Chip Yard
Building 864 Fuel Barn

Table 2-1 Species of Concern Potentially Occurring at Air Force Plant 44, Tucson, Arizona

Common Name	Scientific Name	Status	Occurrence
Amphibians			
Chiricahua leopard frog	*Rana chiricahuensis*	FT	Potentially present at the Plant
Birds			
California least tern	*Sterna antillarum browni*	FE	Potentially present at the Plant
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE	Potentially present at the Plant
Masked bobwhite quail	*Colinus virginianus ridgwayi*	FE	Potentially present at the Plant
Mexican spotted owl	*Strix occidentalis lucida*	FT	Potentially present at the Plant
Yellow-billed Cuckoo	*Coccyzus americanus*	FT	Potentially present at the Plant
Plants			
Kearney's blue star	*Amsonia kearneyana*	FE	Potentially present at the Plant
Acuna cactus	*Echinomastus erectocentrus var. acunensis*	FE	Potentially present at the Plant
Huachuca water-umbel	*Lilaeopsis schaffneriana var. recurva*	FE	Potentially present at the Plant
Canelo Hills ladies'-tresses	*Spiranthes delitescens*	FE	Potentially present at the Plant
Nichol's Turk's Head cactus	*Echinocactus horizonthalonius var. nicholii*	FE	Potentially present at the Plant
Pima pineapple cactus	*Coryphantha scheeri var. robustispina*	FE	Present at the Plant
Mammals			
Jaguar	*Panthera onca*	FE	Potentially present at the Plant
Ocelot	*Leopardus (=Felis) pardalis*	FE	Potentially present at the Plant
Sonoran pronghorn	*Antilocapra americana sonoriensis*	FE	Potentially present at the Plant
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	FE	Potentially present at the Plant
Status Codes for Pima County: FE = Federally Endangered; FT = Federally Threatened In addition to the above federally endangered or federally threatened species, the EDR report lists four birds, three amphibians, 80 flowering plants, and 33 mammals that are on the Arizona State Species of Concern list or are under review for inclusion on the state listing (EDR, 2017b).			

Table 5-1 Preliminary Assessment Report Summary and Recommendations for Potential Aqueous Film-Forming Foam Releases at Air Force Plant 44 Tucson, Arizona

Locations	Rationale	Recommendations
Former North Fire Training Area	• This FTA was used during the 1950's. • Fire training exercises used carbon dioxide powder as well as water to extinguish fires. • AFFF had never been used since fire training in this location occurred before the authorization for the USAF to procure AFFF in 1970.	Close out with no additional investigation
Former South Fire Training Area	• This FTA was used for two or three years during the early 1960's. • A fire engine was used to extinguish the fires, using water as the extinguishing agent. • AFFF had never been used since fire training in this location occurred before the authorization for the USAF to procure AFFF in 1970.	Close out with no additional investigation
Former West Fire Training Area	• This FTA was utilized during the late 1950's. • During the fire training exercises at this location, personnel were trained in the proper use of fire extinguishers. • Water was also used to extinguish fires during the exercises. • AFFF had never been used since fire training in this location occurred before the authorization for the USAF to procure AFFF in 1970.	Close out with no additional investigation
Building 828 Former Fire Station	• Historically, the fire engines carried AFFF storage tanks starting in 2007, but have not carried AFFF since 2015, when the Tucson Fire Department took over firefighting responsibilities at AFP 44. • There were no reported or observed spills that occurred according to the RMS Fire Chief • Currently, the fire engine used for emergency response does not carry AFFF but rather two 25 gallon tanks for Class A and Class B fire suppression. • RMS personnel mentioned that no AFFF has been used in response to a fire at AFP 44.	Close out with no additional investigation
Fire engine Wash Area	• Fire Engine Wash Area, located immediately south of Building 828, is approximately 70 feet long and 40 feet wide and is located on paved surface with a storm drain in the immediate area. • Fire engines were washed down of any residual overspray from AFFF fire training exercises. • The wash area is sloped towards the storm drain, and some wash water may have flowed into the cracks before emptying into the storm drain.	**Initiate a Site Inspection**

	• The storm drain was connected by a culvert to an outfall located approximately 710 feet west of the storm drain. • The RMS Fire Chief mentioned that when the AFFF tanks on the fire engines were "topped off" in this area that it was generally less than 5 gallons of AFFF. • The RMS Fire Chief also mentioned that he did not recall a spill of AFFF ever occurring in this area.	
Fire Engine Wash Outfall	• The Fire Engine Wash Outfall is approximately 710 feet to the west of the Fire Engine Wash Area. • As described above, the Fire Engines were washed down of any residual overspray from AFFF fire training exercises. • The fire engine wash water would then drain into the storm drain, which flowed through a culvert to the Fire Engine Wash Outfall. • The outfall is an unpaved and unlined area that is the beginning of a drainage ditch that runs approximately 0.4 miles west before it empties into an ephemeral stream that continues northwest and enters a drainage culvert underneath the South Nogales Highway and eventually empties into the Santa Cruz River approximately three miles downstream. • There is a small depression at the mouth of the outfall that acts as a retention basin for any drainage. • Based on discussion with the RMS EHSS Manager, the wash water usually remains in the depression until it evaporates, since inflow is usually insufficient to flow through the drainage ditch and offsite, except during periods of moderate to heavy rainfall.	**Initiate a Site Inspection**
Building 836 Chip Yard	• AFFF is stored under a metal canopy on a paved surface and is within secondary containment at the Building 836 Chip Yard. • Total volume of telomer-based 3% Ansulite AFFF stored at the site is 1,355 gallons. • AFFF is transported to the Building 836 Chip Yard via private trucking company and unloaded at the site. • Raytheon manages movement of AFFF from the Building 836 Chip Yard to Building 864, where it is pumped into the fire suppression AFFF holding tank. • There are no records or anecdotal evidence of spills in this area related to delivery, storage, or transport of AFFF to Building 864.	Close out with no additional investigation
Building 864 Fuel Barn	• The Building 864 Fuel Barn is where fuel is stored in an underground vault in Building 864. • The Fuel Barn is equipped with a fire suppression system that uses telomer-based 3% Ansulite AFFF.	**Initiate a Site Inspection**

	• Monthly, quarterly, semi-annual, and annual performance monitoring tests are conducted on the fire suppression system. • Approximately 20 gallons of AFFF are discharged annually during the tests. • A floor drain collects water from inside Building 864 which empties into an enclosed, lined sump on the eastern side of Building 864. • There are no records or anecdotal evidence of spills related to testing or vacuum truck pumping activities at the Building 864 AFFF fire suppression system or sump. • Possibility of unrecorded potential releases during performance monitoring tests.	

APPENDICES

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Appendix A
Communication Records

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Ayuda	Date: 1/19/2017 Time: 0930	**COMMUNICATION RECORD**

Name of Installation, State: AFP 44 - Tucson, AZ	
Interviewer: Keith Reamer	
Organization: Ayuda Companies	**Phone #:** (303) 999-2157
Project Role: PA Team Lead	**Email:** kreamer@ayudacompanies.com
Interviewee: Thomas LaSure	
Organization: EHSS Raytheon	**Phone #:** 520-573-5078
Position/ Job Title: Fire Chief	**Email:** Thomas.e.lasure@raytheon.com
How long in this position? 35 years with Air Force	
How long at this installation? 5 years	
Have you held a similar position at another installation? Yes	
If yes, which installations? Davis Monthan AFB	
How long? 25 years	
Discussion summary:	
The discussion included questions for Mr. LaSure regarding the presence (storage), use, and releases of AFFF at AFP 44. A base map of AFP 44 was provided to the Ayuda PA Team during the interview to assist in identifying potential AFFF release sites. The Ayuda PA Team, escorted by the Fire Chief and EHSS Manager, went to these locations to investigate further.	

Ayuda	Date: 1/19/2017 Time: 0930	**COMMUNICATION RECORD**

Name of Installation, State: AFP 44 - Tucson, AZ	
Interviewer: Keith Reamer	
Organization: Ayuda Companies	**Phone #:** (303) 999-2157
Project Role: PA Team Lead	**Email:** kreamer@ayudacompanies.com
Interviewee: Wayne Cran	
Organization: EHSS Raytheon	**Phone #:** 520-794-1160
Position/ Job Title: EHSS Manager	**Email:** wcran@raytheon.com
How long in this position? 18 years	
How long at this installation? 14 years	
Have you held a similar position at another installation? Yes	
If yes, which installations? Raytheon in Marshall Islands	
How long? 4 years	
Discussion summary:	
The discussion included questions for Mr. Cran regarding the presence (storage), use, and releases of AFFF at AFP 44. A base map of AFP 44 was provided to the Ayuda PA Team during the interview to assist in identifying potential AFFF release sites. The Ayuda PA Team, escorted by the Fire Chief and EHSS Manager, went to these locations to investigate further.	

Ayuda	Date: 1/19/2017 Time: 0930	**COMMUNICATION RECORD**

Name of Installation, State: AFP 44 - Tucson, AZ	
Interviewer: Keith Reamer	
Organization: Ayuda Companies	**Phone #:** (303) 999-2157
Project Role: PA Team Lead	**Email:** kreamer@ayudacompanies.com
Interviewee: Jim Tucker	
Organization: EHSS Raytheon	**Phone #:** 520-665-7445
Position/ Job Title: Fire/Life Safety Engineer	**Email:** james.l.tucker@raytheon.com
How long in this position? 8 years	
How long at this installation? 8 years	
Have you held a similar position at another installation? Yes	
If yes, which installations? Honeywell, Tucson Fire Department, University of Arizona	
How long? 30 years	
Discussion summary:	
The discussion included questions for Mr. Tucker regarding the presence (storage), use, and releases of AFFF at AFP 44. A base map of AFP 44 was provided to the Ayuda PA Team during the interview to assist in identifying potential AFFF release sites. The Ayuda PA Team, escorted by the Fire Chief and EHSS Manager, went to these locations to investigate further.	

M-11

EW-L2

INV 2593.56
INV 2593.58
INV 2593.75

8X24
8X40
8X20
8X20

STORM
GRATE

EW-13

INV 259

M-3A

RAMP

LIFT
STATION

M05

6" SD

INVERT 2595.21
INVERT 2595.23
INVERT 2595.5

12"

6" SD FOR
SEE

827

828

830

831

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM
To: Keith Reamer
Cc: FICKLEN, HOLMES D GS-13 USAF AFMC AFCEC/CZRW; HOWARD, WILLIAM B GS-13 USAF AFMC AFCEC/CZTE
Subject: FW: AFFF Tank at Building 864
Date: Thursday, February 02, 2017 11:11:04 AM
Attachments: 1_File_Filtering_Drop.txt

As requested.

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Kelli Cash [mailto:Kelli.Cash@raytheon.com]
Sent: Thursday, February 02, 2017 1:09 PM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; MCCANN, JEFFREY A CIV USAF AFMC AFLCMC/WNVC <jeffrey.mccann@us.af.mil>; DICKSON, DAVID L CIV USAF AFMC AFLCMC/WNVM <david.dickson@us.af.mil>; Wayne Cran <wcran@raytheon.com>; TOM LASURE <Thomas.E.Lasure@raytheon.com>; Jeffery Pence <Jeffery_M_Pence@raytheon.com>
Subject: RE: AFFF Tank at Building 864

George - please see responses below:

* No hoses are attached to the AFFF drain.
* Foam system tank is approximately 800 Gallon.
* Two Hoses in question
    - O Vent & drain on the outside of the bladder tank
    - O All valves are locked
    - O Monthly PM test procedure requires to check/relieve tank pressure
    - O Check foam levels
* All valves are locked and secured

-----Original Message-----
From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil]
Sent: Wednesday, February 01, 2017 4:41 AM
To: Kelli Cash <Kelli.Cash@raytheon.com>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; MCCANN, JEFFREY A CIV USAF AFMC AFLCMC/WNVC <jeffrey.mccann@us.af.mil>; DICKSON, DAVID L CIV USAF AFMC AFLCMC/WNVM <david.dickson@us.af.mil>
Subject: FW: AFFF Tank at Building 864

Kelly
Can you answer the question below?

Thanks

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Keith Reamer [mailto:kreamer@ayudacompanies.com]
Sent: Tuesday, January 31, 2017 7:41 PM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Subject: AFFF Tank at Building 864

Hi George,

When we were at AFP 44 we visited an AFFF tank at Building 864. There was a hose or two that entered/exited the tank. It was speculated that the hoses were connected to a bladder that could be filled with either air or water, thereby supplying pressure for the AFFF system.

We were unable to talk to Fred about the operation of the tank. Would you be able to provide us with some information regarding the tank (volume, basic operation, whether the hoses were used to empty air or water from the bladder. Did the hoses allow AFFF to be emptied from the tank?

Thanks,

Keith

Building 828

CHIEF

What Building was AFFF kept in? Fire Chief mentioned it was kept in a building next to 828. When was it kept here – years (2007-2015?)

Ayuda understands that there is no longer any AFFF stored in the small building adjacent to the former Building 828 fire station. Is there any information regarding its disposition?

How many Fire Engines at the Fire Station when it was operational? How many had AFFF stored on them? All of them? How many gallons were on each truck?

Building 864

What type of AFFF (3%, 6% Ansul, 3M?) used in system at 864?

Fire Foam, 3% Ansulite

Is any AFFF stored onsite for the system at 864? If so, where?

Raytheon facilities complies with the FM Global Data Sheet 04-12, *Foam-Water Sprinkler Systems*:

Full system recharge of Fire Foam, 3% Ansulite is stored onsite at the building 836 chip bin yard.

> **2.8 Contingency Planning:**
> 2.8.1 Maintain a 100% reserve supply of foam concentrate in separate tanks, compartments, or drums on site, or ensure it is readily available so the system can be restored within 24 hours after operating.
> 2.8.2 If foam solution for hose streams is drawn from the foam-water sprinkler system, stock the necessary amount of additional foam concentrate.

Since the storage area at Building 836 was previously unknown to Ayuda, could you please provide information for the following questions:

Regarding the amount of reserve foam required to be stored for the Building 864 system: Ayuda understands that the system volume is 800 gallons? Is that correct?

Is that the amount currently stored at Building 836, or more?

How many totes are used for storage?

How is new or replacement AFFF delivered from the off-site vendor to the storage area at Building 836?

Were there any spills observed during the transfer?"

Is there any secondary containment at the AFFF storage area at Building 836?

How is AFFF serviced/refilled at the AFFF tank at 864?

Servicing the Fire Foam, 3% Ansulite is pumped from the totes into the system

How is the AFFF delivered from Building 836 to Building 864?

How is the AFFF in the totes transferred to the AFFF tank at Building 864?

How often is the system at 864 tested, or discharged?

Monthly, quarterly, annually

RMS EHSS Manager mentioned that 864 drains into the sump building next to 864 and that a vacuum truck would remove the contents when the sump is full.

What is the flow process for AFFF that would be released into Building 864?

Outside service cleanup

Approximately how many gallons of AFFF would be discharged from Building 864 during each maintenance event?

Where is the vacuum truck emptied? Onsite, or is it sent to a facility offsite?

If a vacuum truck was needed this task would be performed by an outside service and the waste would be sent to a facility offsite

If emptied onsite, where is it emptied?

If any foam was disposed onsite it would be through Building 815 hazardous waste department

From: Keith Reamer
To: "WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM"
Subject: RE: FW: AFP 44 Preliminary Assessment Follow-up Questions
Date: Friday, March 03, 2017 9:50:00 AM

Hey George,

That was fast. Thanks to everyone. This really helps.
Standing by for Building 828 info.

Thank you

Keith Reamer
Project Geologist
Office: 303.999.2157
Cell: 720.668.6613

www.ayudacompanies.com

410 Acoma Street, Suite A
Denver, CO 80204

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Construction Management

-----Original Message-----
From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil]
Sent: Friday, March 03, 2017 5:12 AM
To: Keith Reamer <kreamer@ayudacompanies.com>
Subject: FW: FW: AFP 44 Preliminary Assessment Follow-up Questions

Partial Responses

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Kelli Cash [mailto:Kelli.Cash@raytheon.com]

Sent: Thursday, March 02, 2017 3:39 PM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; Wayne Cran <wcran@raytheon.com>
Subject: FW: FW: AFP 44 Preliminary Assessment Follow-up Questions

George - see response below regarding Bldg 864. I'll send Bldg 828 when I receive it.

From: Jeffery Pence
Sent: Thursday, March 02, 2017 1:20 PM
To: Kelli Cash <Kelli.Cash@raytheon.com>
Cc: Fred Muthart <FredMuthart@raytheon.com>
Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Hello Kelli, I have answered all your questions to the best of my knowledge. I hope this helps. If you have any additional questions please let me know. Thank you, Jeff

Building 864

Since the storage area at Building 836 was previously unknown to Ayuda, could you please provide information for the following questions:

Regarding the amount of reserve foam required to be stored for the Building 864 system: Ayuda understands that the system volume is 800 gallons? Is that correct?

Full system recharge of the 864 system is approximately 800gallons.

Is that the amount currently stored at Building 836, or more?

1355 gallons as of 01/17 inventory check

How many totes are used for storage?

4EA- 265 gallon totes

5EA- 55gallon drums

4EA- 5 gallon drums

How is new or replacement AFFF delivered from the off-site vendor to the storage area at Building 836?

Transport trucking company external delivery

MRO Stores and Raytheon Chemical handlers internal moves

Were there any spills observed during the transfer?"

No

Is there any secondary containment at the AFFF storage area at Building 836?

Yes

How is the AFFF delivered from Building 836 to Building 864?

MRO Stores and Raytheon Chemical handlers internal moves

How is the AFFF in the totes transferred to the AFFF tank at Building 864?

Servicing the Fire Foam, 3% Ansulite is pumped from the totes into the system

Approximately how many gallons of AFFF would be discharged from Building 864 during each maintenance event?

Annually approximately 20 gallons or less

Regards,

Jeffery M. Pence

Facilities Management & Real Estate

Raytheon Missile Systems

Office: 520-545-9046

Cell: 520-307-7635

Fax: 520-794-8234

Jeffery_M_Pence@raytheon.com <mailto:Jeffery_M_Pence@raytheon.com>

-----Original Message-----
From: Kelli Cash
Sent: Thursday, March 02, 2017 12:35 PM
To: Jeffery Pence <Jeffery_M_Pence@raytheon.com <mailto:Jeffery_M_Pence@raytheon.com> >; TOM LASURE <Thomas.E.Lasure@raytheon.com <mailto:Thomas.E.Lasure@raytheon.com> >
Cc: Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >
Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Jeff - can you please respond regarding Bldg 864.

Chief - can you please respond regarding the firehouse.

Thank you for your help!

-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil <mailto:george.warner@us.af.mil>]

Sent: Thursday, March 02, 2017 11:21 AM

To: Kelli Cash <Kelli.Cash@raytheon.com <mailto:Kelli.Cash@raytheon.com> >

Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com <mailto:Daniel_S_Samorano@raytheon.com> >; Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >

Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Please answer the follow up questions.

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

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-----Original Message-----

From: Keith Reamer [mailto:kreamer@ayudacompanies.com <mailto:kreamer@ayudacompanies.com>]

Sent: Thursday, March 02, 2017 1:13 PM

To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil <mailto:george.warner@us.af.mil> >

Cc: Andrew Schmitt <ASchmitt@ayudacompanies.com <mailto:ASchmitt@ayudacompanies.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

Hi George,

I have attached a few more follow-up questions, most of which concern the Building 836 chip yard storage area. We didn't previously have any info on that location so we just need a little info to complete our report. Previous questions are in red text. Previous answers are in black text. Current questions are in blue text.

Thanks again to everyone for taking time to deal with this.

Take care

Keith Reamer

Project Geologist

Office: 303.999.2157

Cell: 720.668.6613

www.ayudacompanies.com <http://www.ayudacompanies.com>

410 Acoma Street, Suite A

Denver, CO 80204

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-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil <mailto:george.warner@us.af.mil>]

Sent: Tuesday, February 28, 2017 10:18 AM

To: Keith Reamer <kreamer@ayudacompanies.com <mailto:kreamer@ayudacompanies.com> >

Cc: Andrew Schmitt <ASchmitt@ayudacompanies.com <mailto:ASchmitt@ayudacompanies.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

Which questions do you need answers?

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

-----Original Message-----

From: Keith Reamer [mailto:kreamer@ayudacompanies.com <mailto:kreamer@ayudacompanies.com>]

Sent: Tuesday, February 28, 2017 12:05 PM

To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil <mailto:george.warner@us.af.mil> >

Cc: Andrew Schmitt <ASchmitt@ayudacompanies.com <mailto:ASchmitt@ayudacompanies.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

George,

No Sir. I think we're all set for now. Does this mean that answers are on their way soon?

Take care

Keith Reamer

Project Geologist

Office: 303.999.2157

Cell: 720.668.6613

www.ayudacompanies.com <http://www.ayudacompanies.com>

410 Acoma Street, Suite A

Denver, CO 80204

-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil <mailto:george.warner@us.af.mil>]

Sent: Tuesday, February 28, 2017 4:42 AM

To: Keith Reamer <kreamer@ayudacompanies.com <mailto:kreamer@ayudacompanies.com> >

Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Keith

Do you have any more questions?

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

-----Original Message-----

From: TOM LASURE [mailto:Thomas.E.Lasure@raytheon.com <mailto:Thomas.E.Lasure@raytheon.com>]

Sent: Monday, February 27, 2017 12:36 PM

To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil <mailto:george.warner@us.af.mil> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

My dates were wrong Apr 2015 for TFD

-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil <mailto:george.warner@us.af.mil>]

Sent: Friday, February 24, 2017 10:19 AM

To: Kelli Cash <Kelli.Cash@raytheon.com <mailto:Kelli.Cash@raytheon.com> >

Cc: Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >; Danny Samorano <Daniel_S_Samorano@raytheon.com <mailto:Daniel_S_Samorano@raytheon.com> >; TOM LASURE <Thomas.E.Lasure@raytheon.com <mailto:Thomas.E.Lasure@raytheon.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

Thanks

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

-----Original Message-----

From: Kelli Cash [mailto:Kelli.Cash@raytheon.com <mailto:Kelli.Cash@raytheon.com>]

Sent: Friday, February 24, 2017 11:56 AM

To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil <mailto:george.warner@us.af.mil> >

Cc: Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >; Danny Samorano <Daniel_S_Samorano@raytheon.com <mailto:Daniel_S_Samorano@raytheon.com> >; TOM LASURE <Thomas.E.Lasure@raytheon.com <mailto:Thomas.E.Lasure@raytheon.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

George - See attached. I don't have answers yet regarding Bldg 828.

Chief - can you please reply regarding 828? Thanks

Building 828

Find out years of operation of Fire Station, Building 828. When did Tucson FD take over Fire Fighting responsibilities?

What Building was AFFF kept in? Fire Chief mentioned it was kept in a building next to 828. When was it kept here - years (20??-20??) Did AFP 44 have more than one Fire Engine when the Fire Station was operational? Was AFFF stored on any of them, or all of them. How much?

-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil <mailto:george.warner@us.af.mil>]

Sent: Friday, February 24, 2017 5:54 AM

To: Kelli Cash <Kelli.Cash@raytheon.com <mailto:Kelli.Cash@raytheon.com> >

Cc: Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >; Danny Samorano <Daniel_S_Samorano@raytheon.com <mailto:Daniel_S_Samorano@raytheon.com> >

Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

Kelli

Any update on the responses?

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

-----Original Message-----

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM

Sent: Thursday, February 16, 2017 2:46 PM

To: Kelli D Cash <Kelli.Cash@raytheon.com <mailto:Kelli.Cash@raytheon.com> >

Cc: Wayne Cran <wcran@raytheon.com <mailto:wcran@raytheon.com> >; Daniel S Samorano <Daniel_S_Samorano@raytheon.com <mailto:Daniel_S_Samorano@raytheon.com> >

Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Kelli

Can you answer the questions? I will answer the last question.

George Warner

AFCEC/CZOM

1981 Monahan Way

WPAFB OH 45433

(937) 904-3784

DSN 674-3784

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-----Original Message-----

From: Keith Reamer [mailto:kreamer@ayudacompanies.com <mailto:kreamer@ayudacompanies.com>]

Sent: Thursday, February 16, 2017 2:44 PM

To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil <mailto:george.warner@us.af.mil> >

Cc: Levi Todd <LTodd@ayudacompanies.com <mailto:LTodd@ayudacompanies.com> >; Andrew Schmitt <ASchmitt@ayudacompanies.com <mailto:ASchmitt@ayudacompanies.com> >

Subject: AFP 44 Preliminary Assessment Follow-up Questions

Hi George,

As I mentioned on the phone, I've attached a list of a few questions that came up during preparation of the AFP 44 Preliminary Assessment report. We'd appreciate if you could take a look at them as soon as you can. I understand that you'll need to run them past the Raytheon folks, too. I'm sure Wayne Cran will be able to provide some help.

I'll call you on Tuesday (2/21) as a follow-up.

Thanks a million.

Keith

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM
To: Keith Reamer
Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions
Date: Wednesday, March 15, 2017 11:44:23 AM
Attachments: 1_File_Filtering_Drop.txt

FYI

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Kelli Cash [mailto:Kelli.Cash@raytheon.com]
Sent: Wednesday, March 15, 2017 1:40 PM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Subject: FW: AFP 44 Preliminary Assessment Follow-up Questions

Below is the response I received from Chief LaSure regarding 828.

-----Original Message-----
From: TOM LASURE
Sent: Monday, February 27, 2017 10:29 AM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>; Kelli Cash <Kelli.Cash@raytheon.com>
Cc: Wayne Cran <wcran@raytheon.com>; Danny Samorano <Daniel_S_Samorano@raytheon.com>; Tony Green <adgreen@raytheon.com>
Subject: RE: AFP 44 Preliminary Assessment Follow-up Questions

Chief - can you please reply regarding 828? Thanks

Building 828
Find out years of operation of Fire Station, Building 828. When did Tucson FD take over Fire Fighting responsibilities?
What Building was AFFF kept in? Fire Chief mentioned it was kept in a building next to 828. When was it kept here - years (20??-20??) Did AFP 44 have more than one Fire Engine when the Fire Station was operational? Was AFFF stored on any of them, or all of them. How much?

Building 828

As far back as I can go is 1985, for many years we stored the foam in the fire station not more than 100 gallons of AFFF and 50 gallons of foam for our CAFS foam system. Soon after that all the foam was moved to the storage building next to 829 where it remained until TFD took over 3rd QTR 2014

From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM
To: Keith Reamer
Cc: HOWARD, WILLIAM B GS-13 USAF AFMC AFCEC/CZTE; FICKLEN, HOLMES D GS-13 USAF AFMC AFCEC/CZRW
Subject: FW: AFP 44 Questions
Date: Tuesday, May 02, 2017 8:13:44 AM

Additional Info

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Kelli Cash [mailto:Kelli.Cash@raytheon.com]
Sent: Wednesday, April 12, 2017 4:06 PM
To: MCCANN, JEFFREY A CIV USAF AFMC AFLCMC/WNVC <jeffrey.mccann@us.af.mil>; WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; Wayne Cran <wcran@raytheon.com>
Subject: [Non-DoD Source] FW: AFP 44 Questions

Jeff/George -- I received an error message that this email was not delivered. Please confirm receipt, thank you.

-----Original Message-----
From: Kelli Cash
Sent: Wednesday, April 12, 2017 12:09 PM
To: 'WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM' <george.warner@us.af.mil>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; MCCANN, JEFFREY A CIV USAF AFMC AFLCMC/WNVC <jeffrey.mccann@us.af.mil>; Wayne Cran <wcran@raytheon.com>
Subject: RE: AFP 44 Questions

I'm so sorry, I had this sitting in my drafts inbox and had not yet sent it. I am just waiting on drawings from Engineering.

Here you are George. Jeff Pence responded to your questions to the best of his knowledge. George - when the final report by these folks is complete, please provide Raytheon with a copy.

1. Is it possible to provide us with a map or diagram showing the drainage line from the fire engine wash area to the fire engine was outfall? I need to verify the accuracy of the culvert path shown on Figure 1-2 in the report.
This needs to be addressed by facilities engineering. Drawings of existing drainage and plot plans will need to be provided by facilities engineering. Awaiting this info from Engr, K. Cash

2. How long has AFFF been stored at the Building 836 Chip Yard?
The AFFF that is stored at the 836 chip yard is approximately 6-8 months old. J.Pence

3. Do you have any records of pressure testing of the AFFF tank at Building 864?

The following Asset Protection PM's are performed on building 864 Specialty Suppression Foam/Water system. Under strategy plan FR-24, Specialty Suppression, Foam/Water. J.Pence
M- 1, Discharge Device Location (Nozzles)
M- 2, Proportioning System Inspection
Q- 1, Foam Strainer Insp. & Maintenance.
Q- 2, System Drainage Inspection
Q- 3, Water Flow Device Inspection
Q- 4, Water Flow Device Test (Mechanical)
S- 1, Water Flow Device Test (Electrical)
A- 1, Discharge Device Location (Sprinkler)
A- 2, Physical System Inspection
A- 3, System Operational Test
A- 4, Foam Concentration Testing
Have there been any pressure tank test failures?
Facilities maintenance has no record of any pressure tank failures. The Asset Protection team is in the process of changing the AFFF concentrate within the next few weeks. We are currently waiting for the surplus of AFFF to be delivered and then the job will be completed. J.Pence

4. We mention in the report that there is a floor drain that collects fluid from inside Building 864 which empties into an enclosed, lined sump on the eastern side of Building 864. Do you know if the sump has ever overflowed?
Facilities maintenance has no record of any overflowed incidents in relation to the enclosed/lined sump on the eastern side of Building 864. J.Pence

5. Is there any information available to us regarding the structural integrity of the sump and the drainage lines from Building 864?
This needs to be addressed by facilities engineering. If a study is requested/needed to investigate the structural integrity of the pump and piping will involve creating a project and funding for an outside service. J.Pence That is, are there any available records or knowledge of inspections (or inspection failures) or repairs?
Facilities maintenance has no record of any inspection failures/repairs to the sump pump and the drainage lines from Building 864. J.Pence

6. Do you know what the sump and drainage conduits are lined with?
This needs to be addressed by facilities engineering. Information will need to be provided from the as built plans. Awaiting this info from Engr, K. Cash

7. Are there any historical aerial images of AFP 44 that you could provide? While I have reviewed images on Google earth, any additional photos may be helpful to our description of site operations.
I have attached an aerial image from 2012 that I had in my files. Otherwise, I am sure I've provided Richard Noble with photos of AFP44 in the past. K. Cash

Kelli D. Cash
Raytheon Missile Systems
FM&RE Project Manager
520.794.3641 Desk
520.247.1925 Mobile
Kelli.Cash@raytheon.com

-----Original Message-----
From: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM [mailto:george.warner@us.af.mil]
Sent: Wednesday, April 05, 2017 12:54 PM
To: Kelli Cash <Kelli.Cash@raytheon.com>
Cc: Danny Samorano <Daniel_S_Samorano@raytheon.com>; MCCANN, JEFFREY A CIV USAF AFMC AFLCMC/WNVC <jeffrey.mccann@us.af.mil>; Wayne Cran <wcran@raytheon.com>

Subject: FW: AFP 44 Questions

Kelli
Can you answer the questions below? I can provide the historical costs.

George Warner
AFCEC/CZOM
1981 Monahan Way
WPAFB OH 45433
(937) 904-3784
DSN 674-3784

-----Original Message-----
From: Keith Reamer [mailto:kreamer@ayudacompanies.com]
Sent: Wednesday, April 05, 2017 3:27 PM
To: WARNER, GEORGE H GS-13 USAF AFMC AFCEC/AFCEC/CZOM <george.warner@us.af.mil>
Cc: Levi Todd <LTodd@ayudacompanies.com>; Andrew Schmitt <ASchmitt@ayudacompanies.com>
Subject: [Non-DoD Source] AFP 44 Questions

Hello George,

As you know, I've been responding to comments on the AFP 44 Preliminary Assessment report we submitted last month. There are a few comments that require some clarification that I am hoping you or someone else at AFP 44 or Raytheon could help with. The questions are listed below. I hope they don't take up too much of your time.

1. Is it possible to provide us with a map or diagram showing the drainage line from the fire engine wash area to the fire engine was outfall? I need to verify the accuracy of the culvert path shown on Figure 1-2 in the report.

2. How long has AFFF been stored at the Building 836 Chip Yard?

3. Do you have any records of pressure testing of the AFFF tank at Building 864? Have there been any pressure tank test failures?

4. We mention in the report that there is a floor drain that collects fluid from inside Building 864 which empties into an enclosed, lined sump on the eastern side of Building 864. Do you know if the sump has ever overflowed?

5. Is there any information available to us regarding the structural integrity of the sump and the drainage lines from Building 864? That is, are there any available records or knowledge of inspections (or inspection failures) or repairs?

6. Do you know what the sump and drainage conduits are lined with?

7. Are there any historical aerial images of AFP 44 that you could provide? While I have reviewed images on Google earth, any additional photos may be helpful to our description of site operations.

Thanks a million, George.

We really appreciate your help with this. Please give me a call if you have any questions. The best number would be for my cell.

Keith Reamer

Project Geologist

Office: 303.999.2157

Cell: 720.668.6613

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Appendix B
Site Visit Notes

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Air Force Plant 44 Preliminary Assessment – Perfluorinated Compounds

Ayuda Site Visit and Interview Notes – Wright Patterson Air Force Base (AFB) on 1/12/17 and Air Force Plant 44 (AFP 44) on 1/19/17

Attendees 1/12/17:

George Warner – Restoration Project Manager AFP 44, United States Air Force (USAF)
Dave Dickson – Industrial Plant Fire Protection Engineer, USAF
Levi Todd – Project Manager/Program Manager, Ayuda Companies (Ayuda)
Keith Reamer – Preliminary Assessment (PA) Team Leader, Ayuda
Andrew Schmitt – PA Team Support, Ayuda

Pre In-Brief – 1/12/17

- AFP 44 is managed out of Wright Patterson AFB in Dayton, Ohio.
- The Ayuda PA Team met at the Wright Patterson AFB visitor's center for badging.
    - The Ayuda PA Team and AFP 44 RPM mobilized to the conference room for the PA presentation and interviews.
- The AFP 44 RPM scheduled to meet with the Ayuda PA Team in Tucson, Arizona at AFP 44 for PA Interviews with Raytheon Missile Systems (RMS) Environment Health Safety and Sustainment (EHSS) personnel.

In-Brief – 1/12/17

- Introductions between the Ayuda PA Team and AFP 44 representatives were conducted.
- Mr. Todd gave an in-brief presentation of Perfluorinated Compounds (PFCs) and Aqueous Film Forming Foam (AFFF), an explanation of the USAF general response, and the PA process including interviews and reporting.

Notes from interview at Wright Patterson AFB – 1/12/17

General Note: The interview questions for AFP 44 were based on a questionnaire that was sent to the AFP 44 RPM prior to the face-to-face interview. The questionnaire focused on use of AFFF at AFP 44 and any knowledge of handling, storage, and potential spill responses involving AFFF at the installation. The following notes were taken during the interview:

- Mr. Warner mentioned that AFP 44 is used for missile production.
- Mr. Dickson mentioned that there used to be an installation Fire Department that was operated by Raytheon, but that Fire Response is currently provided by the City of Tucson Fire Department.
- Mr. Dickson mentioned that he thought that there was a first responder vehicle and crew housed near Building 828, but did not think that the responder vehicle contained AFFF.

- Mr. Dickson and Mr. Warner mentioned that Jim Tucker who is the AFP 44 Fire Protection Engineer (Raytheon) and Tom LaSure who is the AFP 44 Fire Chief (Raytheon) would be good resources for knowledge of AFFF use at AFP 44.
- Mr. Dickson mentioned that Building 864 had a fire protection system that used AFFF.
- Mr. Dickson mentioned that Building 864 housed what was called the "Rock & Roll" Fuel Barn where missiles would be placed on a machine that tilted, turned, and rolled the missile to remove all the fuel.
- Mr. Dickson mentioned that he thought that there was an underground tank that contained AFFF that supplied the overhead fire suppression system in Building 864.
- Mr. Warner mentioned that the AFP 44 site visit scheduled for January 19th, 2017 would allow the Ayuda PA team to get more detailed information on the use of AFFF at the installation.

Ayuda Site Visit and Interview Notes – AFP 44 on 1/19/17

Attendees 1/19/17:

George Warner – Restoration Project Manager AFP 44, USAF
Wayne Cran – EHSS Manager, RMS EHSS
Thomas LaSure – Fire Chief, RMS EHSS
Jim Tucker – Fire/Life Safety Engineer, RMS EHSS
Levi Todd – Project Manager/Program Manager, Ayuda
Keith Reamer – PA Team Leader, Ayuda
Andrew Schmitt – PA Team Support, Ayuda

Pre In-Brief – 1/19/17

- The Ayuda PA Team meets AFP 44 RPM to get badging at the AFP 44 visitor's center.
    - The Ayuda PA Team and AFP 44 RPM mobilize to the conference room for the PA presentation and interviews.

In-Brief – 1/19/17

- Introductions between Ayuda PA Team, AFP 44, and Raytheon representatives were conducted.
- Mr. Todd gave an in-brief presentation of PFCs and AFFF, an explanation of the USAF general response, and the PA process including interviews and reporting.

Notes from interview at AFP 44 – 1/19/17

General Note: The interview questions for AFP 44 were based on a questionnaire that was sent to the AFP 44 RPM prior to the face-to-face interview. The questionnaire focused on use of AFFF at AFP 44 and any knowledge of handling, storage, and potential spill responses involving AFFF at the installation. The following notes were taken during the interview:

- Mr. Cran mentioned that firefighting responsibilities were turned over from Raytheon to Tucson Fire Department in 2015.
- Mr. Cran mentioned that Raytheon still oversees fire protection at the installation.
- Mr. Cran mentioned that mostly AFFF 3% Ansulite or Chem-tech were used.
- Mr. LaSure mentioned that both 3% and 6% were used, but mostly 3%.
- Mr. LaSure mentioned that the AFFF was stored in a small building next to Building 828. He did not recall any spills of AFFF occurring in the building and mentioned that AFFF is no longer stored there.
- Mr. LaSure mentioned that one fire engine is located at building 828 for emergency response and has two-25 gallon tanks on it for fighting Class A and Class B fires. No AFFF is used or stored on the fire engine.
- Mr. LaSure mentioned that the fire engine didn't carry AFFF until 2007 and up to 2015.
- Mr. LaSure mentioned that the Fire Department at AFP 44 used to perform line-burn training for three shifts annually.
- Mr. Cran mentioned that the fire training occurred quarterly at the Davis Monthan AFB fire training area.
- Mr. Cran mentioned that no nozzle testing occurred at AFP 44.
- Mr. LaSure mentioned that after fire training exercises, the fire engine would be brought back to the area south of Building 828 were it would be washed of any residual AFFF overspray that landed onto the fire engine during training. The fire engine was sprayed down with water and the water collected into the nearby storm drain.
- Mr. Cran mentioned that the storm drain was connected to a drainage culvert that emptied out at a retention basin.
- Mr. LaSure mentioned that fire engine AFFF tanks were also serviced in the area south of Building 828. He mentioned that the tanks were topped off there with AFFF, usually less than 5 gallons.
- Mr. Cran mentioned that Building 864 has a fuel tank suppression system that uses AFFF. He mentioned that JP-10 fuel is stored in the fuel tank. A map of AFP 44 was provided by Raytheon so that the Ayuda team could see where the buildings existed on the installation.

At the conclusion of the PA interviews, the Ayuda PA team was escorted to potential release sites at AFP 44 by Mr. Cran and Mr. LaSure. The potential release Sites included the fire engine wash area south of Building 828, the retention basin where the storm drain from south of Building 828 emptied to, and Building 864.

Appendix C
Photographic Record and Field Photographs

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PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	**Location:**	**Date:**
Air Force Plant 44	North of Building 827C (Direction – North)	01/19/2017

Photo No.

A1

Description:

Outfall and drainage ditch that exits the facility to S Nogales Highway.

PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	**Location:**	**Date:**
Air Force Plant 44	40 Feet South of Building 828 (Direction – West)	01/19/2017

Photo No.

A2

Description:

Fire Engine Wash area storm drain immediately south of Building 828.

PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	Location:	Date:
Air Force Plant 44	40 Feet South of Building 828 (Direction – Northeast)	01/19/2017

Photo No.

A3

Description:

Fire Engine Wash area storm drain immediately south of Building 828.

PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	Location:	Date:
Air Force Plant 44	East facing side of Building 864 (Direction – Northwest)	01/19/2017

Photo No.

A4

Description:

AFFF Tank that supplies fire suppression system at Building 864 Fuel Barn.

PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	Location:	Date:
Air Force Plant 44	East facing side of Building 864 (Direction – Northwest)	01/19/2017

Photo No.

A5

Description:

By design, there is no way that AFFF can be released to the environment by these connected hoses, as they are not connected to the bladder containing AFFF. All AFFF valves are secured and locked.

PHOTOGRAPHIC LOG

AFFF Preliminary Assessment Site Visit

Site Name:	Location:	Date:
Air Force Plant 44	Aerial View of Fire Engine Wash Area and Outfall	10/2013

Photo No.

A6

Description:

Aerial View of the Fire Engine Wash Area and Fire Engine Wash Outfall. Google Aerial Image capturing washing of the fire engines at AFP 44.

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Appendix D
Preliminary Assessment Forms

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Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		

Latitude:	Longitude:	Approximate Area of Site:	Status of Site:
32.104283°	-110.935724°	0.25 Acres Square Ft 10,000	☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)

Site Name: Former North Fire Training Area

The former North Fire Training Area was used during the 1950's. Fire Training exercises were conducted approximately three times a week for one month a year. During each session, two 55-gallon drums containing alcohols and flammable solvents were emptied onto the ground, ignited, then extinguished using carbon dioxide powder as well as water. Although the Fire Training Area is no longer used, the exact dates of operation are unknown, since records documenting the training do not exist. The site is inactive as a FTA and AFFF had never been used since fire training in this location occurred before the authorization for the USAF to procure AFFF in 1970.

2. Owner/Operator Information

Owner:	Operator:				
USAF, Air Force Life Cycle Management Center	Raytheon Company				
Street Address:	**Street Address:**				
5135 Pearson Road, Building 10	1151 E Hermans Road				
City:	**City:**				
Wright-Patterson AFB	Tuscon				
State:	**Zip Code:**	**Telephone:**	**State:**	**Zip Code:**	**Telephone:**
OH	45433	N/A	AZ	85756	(520) 794-3000

Type of Ownership:		Type of Ownership:	
☐ Private	☐ County	☑ Private	☐ County
☑ Federal Agency Name: DoD	☐ Municipal	☐ Federal Agency Name: _____	☐ Municipal
☐ State	☐ Not Specified	☐ State	☐ Not Specified
☐ Indian	☐ Other_____	☐ Indian	☐ Other_____

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017

Street Address:	City:	State:
410 Acoma Street	Denver	CO

Name of EPA or State Agency Contact:	Street Address:
N/A	N/A

City:	State:	Telephone:
N/A	N/A	N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year 1950s

Ending Year 1950s

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [ ] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [ ] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

170 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.45 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

Depth to Shallowest Aquifer:

158 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile _____

>1/4 - 1/2 Mile _____

>1/2 - 1 Mile _____

>1 - 2 Mile _____

>2 - 3 Mile _____

>3 - 4 Mile _____

Total Within 4 Miles[4] Unknown

*Use population #s for PA Table 2

*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

4,750 Feet
0.9 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☑ Yes
☐ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name: Air Force Plant 44 | Street Address: 1151 E. Hermans Rd.

City: Tucson | State: AZ | Zip Code: 85756 | County: Pima | Co. Code: | Cong. Dist:

Latitude: 32.101125° | Longitude: -110.934592°

Approximate Area of Site: 0.25 Acres Square Ft 10,000

Status of Site: ☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)

Site Name: Former South Fire Training Area

The former South Fire Training Area was the southern-most FTA, located approximately 150 feet west of Building 866. This FTA was used for two or three years, three to five times a year during the early 1960's. The training exercises at this location involved flow fires in which flammable liquids were discharged from a 150-gallon tank down a sloped tile drainageway into a trough and ignited. A fire engine was used to extinguish the fires, using water as the extinguishing agent. Although the Fire Training Area is no longer used, the exact dates of operation are unknown, since records documenting the training do not exist. The site is inactive as a FTA and AFFF had never been used due to fire training in this location occurring before the authorization for the USAF to procure AFFF in 1970.

2. Owner/Operator Information

Owner: USAF, Air Force Life Cycle Management Center | Operator: Raytheon Company

Street Address: 5135 Pearson Road, Building 10 | Street Address: 1151 E Hermans Road

City: Wright-Patterson AFB | City: Tuscon

State: OH | Zip Code: 45433 | Telephone: N/A | State: AZ | Zip Code: 85756 | Telephone: (520) 794-3000

Type of Ownership:

☐ Private ☑ Federal Agency Name: DoD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

Type of Ownership:

☑ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

3. Site Evaluator Information

Name of Evaluator: Keith Reamer | Agency/Organization: Ayuda Companies | Date Prepared: 2/22/2017

Street Address: 410 Acoma Street | City: Denver | State: CO

Name of EPA or State Agency Contact: N/A | Street Address: N/A

City: N/A | State: N/A | Telephone: N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:

☐ Yes ☐ No

Date: _____

CERCLIS Recommendation:

☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____

Date: _____

Signature:

Name (typed):

Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year 1960s

Ending Year 1960s

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [ ] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [ ] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

150 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill	_____	____
[ ] Surface Impoundment	_____	____
[ ] Drums	_____	____
[ ] Tanks and Non-Dum Containers	_____	____
[ ] Chemical Waste Pile	_____	____
[ ] Scrap Metal or Junk Pile	_____	____
[ ] Tailings Pile	_____	____
[ ] Trash Pile (open drum)	_____	____
[ ] Land Treatment	_____	____
[ ] Contaminated GW Plume (unidentified source)	_____	____
[ ] Contaminated SW/Sediment (unidentified source)	_____	____
[ ] Contaminated Soil	_____	____
[x] Other Fire Fighting	Unknown	____
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.47 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

Depth to Shallowest Aquifer:

148 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile	_____
>1/4 - 1/2 Mile	_____
>1/2 - 1 Mile	_____
>1 - 2 Mile	_____
>2 - 3 Mile	_____
>3 - 4 Mile	_____
Total Within 4 Miles[4]	Unknown

*Use population #s for PA Table 2
*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

4,750 Feet
0.9 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☑ Yes
☐ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name: Air Force Plant 44

Street Address: 1151 E. Hermans Rd.

City: Tucson | State: AZ | Zip Code: 85756 | County: Pima | Co. Code: | Cong. Dist:

Latitude: 32.102272° | Longitude: -110.946471°

Approximate Area of Site: 0.25 Acres Square Ft 10,000

Status of Site: ☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)

Site Name: Former West Fire Training Area

The former West Fire Training Area was utilized during the late 1950's at AFP 44 and was located approximately 150 feet west of Building 826. Two months per year, small contained fires were ignited at the area on a weekly basis. These exercises used less than 5-gallons of flammable liquids for each occurrence. During these exercises, personnel were trained in the proper use of fire extinguishers. Water was also used to extinguish fires during the exercises. Although the Fire Training Area is no longer used, the exact dates of operation are unknown, since records documenting the training do not exist. The site is inactive as a FTA and AFFF had never been used since fire training in this location occurred before the authorization for the USAF to procure AFFF in 1970.

2. Owner/Operator Information

Owner: USAF, Air Force Life Cycle Management Center

Street Address: 5135 Pearson Road, Building 10

City: Wright-Patterson AFB | State: OH | Zip Code: 45433 | Telephone: N/A

Type of Ownership:
☐ Private ☑ Federal Agency Name: DoD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

Operator: Raytheon Company

Street Address: 1151 E Hermans Road

City: Tuscon | State: AZ | Zip Code: 85756 | Telephone: (520) 794-3000

Type of Ownership:
☑ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

3. Site Evaluator Information

Name of Evaluator: Keith Reamer | Agency/Organization: Ayuda Companies | Date Prepared: 2/22/2017

Street Address: 410 Acoma Street | City: Denver | State: CO

Name of EPA or State Agency Contact: N/A | Street Address: N/A

City: N/A | State: N/A | Telephone: N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:
☐ Yes ☐ No
Date: _____

CERCLIS Recommendation:
☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____
Date: _____

Signature:

Name (typed):

Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year 1950s

Ending Year 1950s

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [ ] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [ ] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

150 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

0.80 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

Depth to Shallowest Aquifer:

148 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile	_____
>1/4 - 1/2 Mile	_____
>1/2 - 1 Mile	_____
>1 - 2 Mile	_____
>2 - 3 Mile	_____
>3 - 4 Mile	_____
Total Within 4 Miles[4]	Unknown

*Use population #s for PA Table 2
*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

4,750 Feet
0.9 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☑ Yes
☐ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		
Latitude:	**Longitude:**	**Approximate Area of Site:**		**Status of Site:**	
32.104592°	-110.943459°	0.21 Acres Square Ft 9,000		☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)	

Site Name: Building 828 Former Fire Station

Currently, Building 828 houses a fire engine used for emergency response at AFP 44. The fire engine does not carry AFFF but rather two 25 gallon tanks for Class A and Class B fire suppression. Historically, the fire engines contained AFFF tanks starting in 2007, but have not carried AFFF since 2015 when the Tucson Fire Department took over firefighting responsibilities at AFP 44. When AFP 44 was responsible for firefighting responsibilities, AFFF was stored in an out-building next to Building 828. There was no secondary containment in the building that stored the 5-gallon buckets of AFFF, but there were also no reported or observed spills that occurred.

2. Owner/Operator Information

Owner:			Operator:		
USAF, Air Force Life Cycle Management Center			Raytheon Company		
Street Address:			**Street Address:**		
5135 Pearson Road, Building 10			1151 E Hermans Road		
City:			**City:**		
Wright-Patterson AFB			Tuscon		
State:	**Zip Code:**	**Telephone:**	**State:**	**Zip Code:**	**Telephone:**
OH	45433	N/A	AZ	85756	(520) 794-3000

Type of Ownership:

☐ Private ☑ Federal Agency Name: DoD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

Type of Ownership:

☑ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other_____

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017
Street Address:	**City:**	**State:**
410 Acoma Street	Denver	CO
Name of EPA or State Agency Contact:	**Street Address:**	
N/A	N/A	
City:	**State:**	**Telephone:**
N/A	N/A	N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year 1951

Ending Year 2012

- [ ] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [x] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [x] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

330 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.03 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile _____

>1/4 - 1/2 Mile _____

>1/2 - 1 Mile _____

>1 - 2 Mile _____

>2 - 3 Mile _____

>3 - 4 Mile _____

Total Within 4 Miles[4] Unknown

Depth to Shallowest Aquifer:

158 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

*Use population #s for PA Table 2

*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

5,280 Feet
1.0 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☑ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		
Latitude:	**Longitude:**	**Approximate Area of Site:**	**Status of Site:**		
32.104356°	-110.943451	0.11 Acres Square Ft 5,000	☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)		

Site Name: Fire Engine Wash Area

The Fire Engine Wash Area is located on paved surface with a storm drain in the immediate area. Fire engines were washed of any residual overspray from AFFF fire training exercises that took place offsite from AFP 44. Wash-water flowed over the cracked pavement and into a storm drain in the immediate area. The storm drain is connected by a culvert to an outfall located approximately 710 feet west of the storm drain. Reportedly, no spills of AFFF ever occurred in this area. The number of times the fire engines were washed in this area is unknown, although it is reported that washing fire engines has not occurred on base at AFP 44 for at least the last five years.

2. Owner/Operator Information

Owner:			Operator:		
USAF, Air Force Life Cycle Management Center			Raytheon Company		
Street Address:			**Street Address:**		
5135 Pearson Road, Building 10			1151 E Hermans Road		
City:			**City:**		
Wright-Patterson AFB			Tuscon		
State:	**Zip Code:**	**Telephone:**	**State:**	**Zip Code:**	**Telephone:**
OH	45433	N/A	AZ	85756	(520) 794-3000

Type of Ownership:		Type of Ownership:	
☐ Private	☐ County	☑ Private	☐ County
☑ Federal Agency Name: DoD	☐ Municipal	☐ Federal Agency Name: _____	☐ Municipal
☐ State	☐ Not Specified	☐ State	☐ Not Specified
☐ Indian	☐ Other_____	☐ Indian	☐ Other_____

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017
Street Address:	**City:**	**State:**
410 Acoma Street	Denver	CO
Name of EPA or State Agency Contact:	**Street Address:**	
N/A	N/A	
City:	**State:**	**Telephone:**
N/A	N/A	N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year __

Ending Year __

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [x] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [x] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

30 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill	_____	____
[ ] Surface Impoundment	_____	____
[ ] Drums	_____	____
[ ] Tanks and Non-Dum Containers	_____	____
[ ] Chemical Waste Pile	_____	____
[ ] Scrap Metal or Junk Pile	_____	____
[ ] Tailings Pile	_____	____
[ ] Trash Pile (open drum)	_____	____
[ ] Land Treatment	_____	____
[ ] Contaminated GW Plume (unidentified source)	_____	____
[ ] Contaminated SW/Sediment (unidentified source)	_____	____
[ ] Contaminated Soil	_____	____
[x] Other Fire Fighting	Unknown	____
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.02 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

Depth to Shallowest Aquifer:

158 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile	_____
>1/4 - 1/2 Mile	_____
>1/2 - 1 Mile	_____
>1 - 2 Mile	_____
>2 - 3 Mile	_____
>3 - 4 Mile	_____
Total Within 4 Miles[4]	Unknown

*Use population #s for PA Table 2
*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

5,280 Feet
1.0 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☑ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		
Latitude:	**Longitude:**	**Approximate Area of Site:**		**Status of Site:**	
32.104356°	-110.943451	0.11 Acres Square Ft 5,000		☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)	

Site Name: Fire Engine Wash Outfall

The Fire Engine Wash Outfall is downstream of the Fire Engine Wash Area where the fire engines were washed of any residual AFFF from offsite fire training exercises. An unknown volume of water containing 3% and 6% AFFF was washed into the storm drain at the Fire Engine Wash Area and into the Fire Engine Wash Outfall. Fire engine washing has has reportedly not occurred on base at AFP 44 for at least the last five years. After the water drains from the storm drain to the outfall, there is a small depression at the mouth of the outfall that acts as an evaporative retention basin for any drainage.

2. Owner/Operator Information

Owner:			Operator:		
USAF, Air Force Life Cycle Management Center			Raytheon Company		
Street Address:			**Street Address:**		
5135 Pearson Road, Building 10			1151 E Hermans Road		
City:			**City:**		
Wright-Patterson AFB			Tuscon		
State:	**Zip Code:**	**Telephone:**	**State:**	**Zip Code:**	**Telephone:**
OH	45433	N/A	AZ	85756	(520) 794-3000

Type of Ownership:		Type of Ownership:	
☐ Private	☐ County	☑ Private	☐ County
☑ Federal Agency Name: DoD	☐ Municipal	☐ Federal Agency Name: _____	☐ Municipal
☐ State	☐ Not Specified	☐ State	☐ Not Specified
☐ Indian	☐ Other_____	☐ Indian	☐ Other_____

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017
Street Address:	**City:**	**State:**
410 Acoma Street	Denver	CO
Name of EPA or State Agency Contact:	**Street Address:**	
N/A	N/A	
City:	**State:**	**Telephone:**
N/A	N/A	N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year: Unknown

Ending Year: 2012

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [x] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [x] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

310 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

0.90 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☑ Yes
☐ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile _____

>1/4 - 1/2 Mile _____

>1/2 - 1 Mile _____

>1 - 2 Mile _____

>2 - 3 Mile _____

>3 - 4 Mile _____

Total Within 4 Miles[4] Unknown

Depth to Shallowest Aquifer:

134 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

*Use population #s for PA Table 2

*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

4,750 Feet
0.9 Miles

Is There a Suspected Release to Surface Water[1]:

☑ Yes
☐ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

_____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☑ Yes
☐ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: 0.2 Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		
Latitude:	**Longitude:**	**Approximate Area of Site:**	**Status of Site:**		
32.104243°	-110.945710°	____Acres Square Ft ____	☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)		

Site Name: Building 836 Chip Yard

AFFF is stored under a metal canopy on a paved surface and is within secondary containment at the Building 836 Chip Yard. Total volume of AFFF stored at the site is 1,355 gallons. Historical storage of other types of AFFF is unknown. AFFF is transported to the Building 836 Chip Yard via private trucking company and unloaded at the site. Raytheon manages movement of AFFF from the Building 836 Chip Yard to Building 864, where it is pumped into the fire suppression AFFF holding tank. There are no records or anecdotal evidence of spills in this area related to delivery, storage, or transport of AFFF to Building 864.

2. Owner/Operator Information

Owner:			Operator:		
USAF, Air Force Life Cycle Management Center			Raytheon Company		
Street Address:			**Street Address:**		
5135 Pearson Road, Building 10			1151 E Hermans Road		
City:			**City:**		
Wright-Patterson AFB			Tuscon		
State:	**Zip Code:**	**Telephone:**	**State:**	**Zip Code:**	**Telephone:**
OH	45433	N/A	AZ	85756	(520) 794-3000

Type of Ownership:

☐ Private ☐ County
☑ Federal Agency ☐ Municipal
Name: DoD ☐ Not Specified
☐ State ☐ Other_____
☐ Indian

Type of Ownership:

☑ Private ☐ County
☐ Federal Agency ☐ Municipal
Name: _____ ☐ Not Specified
☐ State ☐ Other_____
☐ Indian

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017
Street Address:	**City:**	**State:**
410 Acoma Street	Denver	CO
Name of EPA or State Agency Contact:	**Street Address:**	
N/A	N/A	
City:	**State:**	**Telephone:**
N/A	N/A	N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year 1951

Ending Year 2012

- [ ] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [x] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [x] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

330 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.45 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile _____

>1/4 - 1/2 Mile _____

>1/2 - 1 Mile _____

>1 - 2 Mile _____

>2 - 3 Mile _____

>3 - 4 Mile _____

Total Within 4 Miles[4] Unknown

*Use population #s for PA Table 2

*Note nearest well for #5 on GW Pathway Scoresheet

Depth to Shallowest Aquifer:

158 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

5,280 Feet
1.0 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☑ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5] ____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Preliminary Assessment Form

Identification

State: AZ | CERCLIS #:

CERCLIS Discovery Date:

1. General Site Information

Name:	Street Address:				
Air Force Plant 44	1151 E. Hermans Rd.				
City:	**State:**	**Zip Code:**	**County:**	**Co. Code:**	**Cong. Dist:**
Tucson	AZ	85756	Pima		

Latitude:	Longitude:	Approximate Area of Site:	Status of Site:
32.094791°	-110.926586°	0.1 Acres Square Ft 440	☐ Active ☐ Not Specified ☑ Inactive ☐ NA (GW plume, etc.)

Site Name: Building 864 Fuel Barn

The Fuel Barn is equipped with an 800-gallon AFFF fire suppression system at the north end of Building 864. The AFFF is stored in a tank located to the east of Building 864. There has never been a fire inside of the Fuel Barn. A floor drain empties into a sump building next to Building 864. When the sump is filled with liquids, a vacuum truck is used to remove the contents of the sump, which are then transported offsite for disposal. There are no records or anecdotal evidence of AFFF spills at Building 864.

2. Owner/Operator Information

Owner: USAF, Air Force Life Cycle Management Center			Operator: Raytheon Company		
Street Address: 5135 Pearson Road, Building 10			**Street Address:** 1151 E Hermans Road		
City: Wright-Patterson AFB			**City:** Tuscon		
State: OH	**Zip Code:** 45433	**Telephone:** N/A	**State:** AZ	**Zip Code:** 85756	**Telephone:** (520) 794-3000

Type of Ownership:		Type of Ownership:	
☐ Private	☐ County	☑ Private	☐ County
☑ Federal Agency Name: DoD	☐ Municipal	☐ Federal Agency Name: _____	☐ Municipal
☐ State	☐ Not Specified	☐ State	☐ Not Specified
☐ Indian	☐ Other_____	☐ Indian	☐ Other_____

3. Site Evaluator Information

Name of Evaluator:	Agency/Organization:	Date Prepared:
Keith Reamer	Ayuda Companies	2/22/2017

Street Address:	City:	State:
410 Acoma Street	Denver	CO

Name of EPA or State Agency Contact:	Street Address:	
N/A	N/A	
City: N/A	**State:** N/A	**Telephone:** N/A

4. Site Disposition *(for EPA use only)*

Emergency Response/Removal Assessment Recommendation:	CERCLIS Recommendation:	Signature:
☐ Yes ☐ No	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____	Name (typed):
Date: _____	Date: _____	Position:

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply):

- [x] Industrial
- [ ] Commercial
- [x] Residential
- [ ] Forest/Fields
- [ ] Agriculture
- [ ] Mining
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility: _____
- [ ] Other _____

Site Setting:

- [ ] Urban
- [x] Suburban
- [ ] Rural

Years of Operation:

Beginning Year ___

Ending Year ___

- [x] Unknown

Type of Site Operations (check all that apply):

- [ ] Manufacturing (must check subcategory)
  - [ ] Lumber and Wood Products
  - [ ] Inorganic Chemicals
  - [ ] Plastic and/or Rubber Products
  - [ ] Paints, Varnishes
  - [ ] Industrial Organic Chemicals
  - [ ] Agricultural Chemicals
  - [ ] Miscellaneous Chemical Products
  - [ ] Primary Metals
  - [ ] Metal Coating, Plating, Engraving
  - [ ] Metal Forging, Stamping
  - [x] Fabricated Structural Metal Products
  - [ ] Electronic Equipment
  - [x] Other Manufacturing
- [ ] Mining
  - [ ] Metals
  - [ ] Coal
  - [ ] Oil and Gas
  - [ ] Non-metallic Minerals
- [ ] Retail
- [ ] Recycling
- [ ] Junk/Salvage Yard
- [ ] Municipal Landfill
- [ ] Other Landfill
- [x] DOD
- [ ] DOE
- [ ] DOI
- [ ] Other Federal Facility _____
- [ ] RCRA
  - [ ] Treatment, Storage, or Disposal
  - [ ] Large Quantity Generator
  - [ ] Small Quantity Generator
  - [ ] Subtitle D
    - [ ] Municipal
    - [ ] Industrial
  - [ ] "Converter"
  - [ ] "Protective Filer"
  - [ ] "Non-or Late Filer"
- [ ] Note Specified
- [ ] Other_____

Waste Generated:

- [x] Onsite
- [ ] Offsite
- [ ] Onsite and Offsite

Waste Deposition Authorized By:

- [x] Present Owner
- [ ] Former Owner
- [ ] Present & Former Owner
- [ ] Unauthorized
- [ ] Unknown

Waste Accessible to the Public:

- [ ] Yes
- [x] No

Distance to Nearest Dwelling, School, or Workplace:

0 Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type (check all that apply)	Source Waste Quantity (include unit)	Tier*:
[ ] Landfill		
[ ] Surface Impoundment		
[ ] Drums		
[ ] Tanks and Non-Dum Containers		
[ ] Chemical Waste Pile		
[ ] Scrap Metal or Junk Pile		
[ ] Tailings Pile		
[ ] Trash Pile (open drum)		
[ ] Land Treatment		
[ ] Contaminated GW Plume (unidentified source)		
[ ] Contaminated SW/Sediment (unidentified source)		
[ ] Contaminated Soil		
[x] Other Fire Fighting	Unknown	
[ ] No Sources		

*C=Constituent, W=Wastestream, V=Volume, A=Area

General Type of Waste (check all that apply):

- [ ] Metals
- [ ] Organics
- [ ] Inorganics
- [ ] Solvents
- [ ] Paints/Pigments
- [ ] Laboratory/Hospital Waste
- [ ] Radioactive Waste
- [ ] Construction/Demolition Waste
- [ ] Pesticides/Herbicides
- [ ] Acids/Bases
- [ ] Oily Waste
- [ ] Municipal Waste
- [ ] Mining Waste
- [ ] Explosives
- [x] Other: AFFF

Physical State of Waste as Deposited (check all that apply):

- [ ] Solid
- [ ] Sludge
- [ ] Powder
- [x] Liquid
- [ ] Gas

7. Ground Water Pathway

Is Ground Water Used for Drinking Within 4 Miles:

☑ Yes
☐ No

If Yes, Distance to nearest Drinking Well:

1.28 Miles

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☑ Municipal
☑ Private
☐ None

Is There a Suspected Release to Ground Water[1]:

☐ Yes
☑ No

Have Primary Target Drinking Water Wells Been Identified:

☐ Yes
☑ No

If Yes, Enter Primary Target Population:

____ People[3]

Depth to Shallowest Aquifer:

158 Feet

Karst Terrain/Aquifer Present:

☐ Yes
☑ No

Nearest Designated Wellhead Protection Area[6]:

☐ Underlies Site
☐ >0-4 Miles
☑ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile _____

>1/4 - 1/2 Mile _____

>1/2 - 1 Mile _____

>1 - 2 Mile _____

>2 - 3 Mile _____

>3 - 4 Mile _____

Total Within 4 Miles[4] Unknown

*Use population #s for PA Table 2
*Note nearest well for #5 on GW Pathway Scoresheet

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☑ Stream ☐ River ☑ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other_____

Shortest Overland Distance From Any Source to Surface Water:

5,280 Feet
1.0 Miles

Is There a Suspected Release to Surface Water[1]:

☐ Yes
☑ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☐ >10yr - 100yr Floodplain
☐ >100yr - 500yr Floodplain
☑ >500yr Floodplain

Drinking Water Intake Located Along the Surface Water Migration Path:

☐ Yes
☑ No

Have Primary Target Drinking Water Intakes Been Identified:

☐ Yes
☑ No

If Yes, Distance to Nearest Drinking Water Intake : _____Miles[6]

If Yes, Enter Population Served by Target Intake:

____ People[4]

List All Secondary Target Drinking Water Intakes:

Name:	Water Body:	Flow (cfs):	Population Served:

Total within 15 Miles [4] _____

Fisheries Located Along the Surface Water Migration Path:

☐ Yes ☑ No

If Yes, Distance to Nearest Fishery: _____ Miles

Have Primary Target Fisheries Been Identified:

☐ Yes ☑ No

List All Secondary Target Fisheries[10]:

Water Body/ Fishery Name :	Flow (cfs):

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☑ Yes
☐ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☑ No

List All Wetlands:

Water Body :	Flow (cfs):	Frontage miles:
PUBK Wetland	0 cfs	
R4SBC Wetland	0 cfs	3.5 miles
R4SBA Wetland	0 cfs	11.5 miles

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☑ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☑ No

List All Sensitive Environments[11]:

Water Body :	Flow (cfs):	Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, Enter Total Residential Population:

_____ People[2]

Number of Workers Onsite[4]:

☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People[7]

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☑ No

If Yes, List Each Terrestrial Sensitive Environment[5]:

_____
_____
_____

*

10. Air Pathway

Is there a Suspected Release to Air[1]:

☐ Yes
☑ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles [3-5]____

Wetlands Located Within 4 Miles of the Site[6]:

☑ Yes
☐ No

If Yes, How Many Acres: 35 Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☑ No

List All Sensitive Environments Within 1/2 Mile of the Site[6]:

Distance:	Sensitive Environment Type/Wetlands Area (acres):
Onsite	
0-1/4 Mile	
>1/4-1/2 Mile	

*

Appendix E
Safety Data Sheets

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Safety Data Sheet

This safety data sheet complies with the requirements of: 2012 OSHA Hazard Communication Standard (29CFR 1910.1200)

Product name ANSULITE AFC-5A 3% AFFF

1. Identification

1.1. Product Identifier

Product name ANSULITE AFC-5A 3% AFFF

1.2. Other means of identification

Product code 000057
Synonyms None
Chemical Family No information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use Fire extinguishing agent
Uses advised against Consumer use

1.4. Details of the Supplier of the Safety Data Sheet

Company Name Tyco Fire Protection Products
One Stanton Street
Marinette, WI 54143-2542
Telephone: 715-735-7411
Contact point Product Stewardship at 1-715-735-7411
E-mail address psra@tycofp.com

1.5. Emergency Telephone Number

Emergency telephone CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation - Category 2

2.2. Label Elements

Signal Word
WARNING

hazard statements
Causes serious eye irritation

Precautionary Statements

Prevention
Wash face, hands and any exposed skin thoroughly after handling. Wear protective gloves/protective clothing/eye

protection/face protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

2.3. Hazards Not Otherwise Classified (HNOC)

Not Applicable.

2.4. OTHER INFORMATION

Unknown Acute Toxicity 6.11% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on Ingredients

3.1. Mixture

The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No	weight-%
2-(2-Butoxyethoxy)ethanol	112-34-5	10 - 30
Perfluoro Telomer	Proprietary	1 - 5
Anionic Fluorinated Surfactant	Proprietary	1 - 5
Lauryl Imino Propionate, Sodium Salt	14960-06-6	1 - 5

4. First aid measures

4.1. Description of first aid measures

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water. Get medical attention if irritation develops and persists.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. (Get medical attention immediately if symptoms occur.).

Ingestion Rinse mouth. Do not induce vomiting without medical advice. If swallowed, call a poison control center or physician immediately.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms No information available.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

Note to physicians Treat symptomatically.

5. Fire-fighting measures

5.1. Suitable Extinguishing Media

Product is extinguishing agent. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Unsuitable Extinguishing Media

None.

5.3. Specific Hazards Arising from the Chemical

None known.

Hazardous Combustion Products Carbon oxides, Fluorinated oxides, Nitrogen oxides (NOx), Oxides of sulfur

5.4. Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

5.5. Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions Ensure adequate ventilation, especially in confined areas.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental Precautions

Environmental Precautions Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Pick up and transfer to properly labeled containers.

7. Handling and Storage

7.1. Precautions for Safe Handling

Advice on safe handling Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible Materials Strong oxidizing agents. Strong acids. Strong bases.

8. Exposure Controls/Personal Protection

8.1. Control Parameters

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
2-(2-Butoxyethoxy)ethanol 112-34-5	TWA: 10 ppm inhalable fraction and vapor	-	-

ACGIH (American Conference of Governmental Industrial Hygienists) OSHA (Occupational Safety and Health Administration of the US Department of Labor) NIOSH IDLH Immediately Dangerous to Life or Health

8.2. Appropriate Engineering Controls

Engineering controls	Showers Eyewash stations Ventilation systems.

8.3. Individual protection measures, such as personal protective equipment

Eye/Face Protection	Avoid contact with eyes. Tight sealing safety goggles.
Skin and Body Protection	Wear protective gloves and protective clothing.
Respiratory Protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Ventilation	Use local exhaust or general dilution ventilation to control exposure with applicable limits

8.4. General hygiene considerations

Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State	Liquid		
Odor	Characteristic	**Color**	No data available
odor threshold	No data available		

Property	**VALUES**	**Remarks • Method**
pH	7	
Melting point/freezing point	No data available	
Boiling point / boiling range	> 100 °C / 212 °F	
Flash Point	> 100 °C / > 212 °F	
Evaporation Rate	No data available	
flammability (solid, gas)	No data available	
Flammability limit in air		
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor Pressure	No data available	
Vapor Density	No data available	
Specific gravity	No data available	
Water Solubility	No data available	
Solubility in Other Solvents	No data available	
Partition coefficient	No data available	
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Kinematic viscosity	No data available	

10. Stability and Reactivity

10.1. Chemical Stability

Stable under recommended storage conditions.

10.2. Reactivity
No data available

10.3. Possibility of hazardous reactions

None under normal processing.

hazardous polymerization Hazardous polymerization does not occur.

10.4. Conditions to Avoid

Extremes of temperature and direct sunlight.

10.5. Incompatible Materials

Strong oxidizing agents. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Carbon oxides. Nitrogen oxides (NOx). Oxides of sulfur. Fluorinated oxides.

11. Toxicological Information

11.1. Information on Likely Routes of Exposure

Product information no data available

INHALATION no data available.

Eye Contact no data available.

Skin contact no data available.

INGESTION no data available.

Acute Toxicity

Chemical name	Oral LD50	dermal LD50	Inhalation LC50
2-(2-Butoxyethoxy)ethanol 112-34-5	= 3384 mg/kg (Rat)	= 2700 mg/kg (Rabbit)	-
Anionic Fluorinated Surfactant	> 10,000 ppm (Rat)	-	-

11.2. Information on Toxicological Effects

Symptoms No information available.

11.3. Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization No information available.
Germ Cell Mutagenicity No information available
carcinogenicity No information available.
Reproductive Toxicity No information available.
STOT - Single Exposure No information available.
STOT - Repeated Exposure No information available.
Aspiration Hazard No information available.

11.4. Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document mg/kg

12. Ecological Information

12.1. ecotoxicity
Not classified

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
2-(2-Butoxyethoxy)ethanol 112-34-5	EC50 96 h > 100 mg/L Desmodesmus subspicatus	LC50 96 h = 1300 mg/L Lepomis macrochirus static	EC50 24 h = 2850 mg/L Daphnia magna EC50 48 h > 100 mg/L Daphnia magna
2-Methyl-2,4-pentanediol 107-41-5	-	LC50 96 h 10500 - 11000 mg/L Pimephales promelas flow-through LC50 96 h = 10000 mg/L Lepomis macrochirus static LC50 96 h = 8690 mg/L Pimephales promelas flow-through LC50 96 h = 10700 mg/L Pimephales promelas static	EC50 48 h 2700 - 3700 mg/L Daphnia magna
t-Butanol 75-65-0	EC50 72 h > 1000 mg/L Desmodesmus subspicatus	LC50 96 h 6130 - 6700 mg/L Pimephales promelas flow-through	EC50 48 h = 933 mg/L Daphnia magna EC50 48 h 4607 - 6577 mg/L Daphnia magna Static
Polyethylene Glycol 25322-68-3	-	LC50 24 h > 5000 mg/L Carassius auratus	-

12.2. Persistence and Degradability
No information available.

12.3. Bioaccumulation
No information available.

12.4. Other Adverse Effects
No information available

13. Disposal Considerations

13.1. Waste Treatment Methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container.

14. Transport Information

DOT NOT REGULATED

TDG NOT REGULATED

MEX NOT REGULATED

ICAO (air) NOT REGULATED

IATA	NOT REGULATED
IMDG	NOT REGULATED

15. Regulatory Information

15.1. International Inventories

TSCA	Complies
DSL/NDSL	Complies
ENCS	Does not comply
IECSC	Does not comply
KECL	Complies
PICCS	Does not comply
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %
2-(2-Butoxyethoxy)ethanol - 112-34-5	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic health hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

15.3. US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania

2-(2-Butoxyethoxy)ethanol 112-34-5	X	-	X
2-Methyl-2,4-pentanediol 107-41-5	X	X	X
t-Butanol 75-65-0	X	X	X

16. Other information, including date of preparation of the last revision

NFPA	**Health Hazards** 0	**flammability** 1	**Instability** 0	**Physical and chemical properties** -
HMIS	**Health Hazards** 0	**flammability** 1	**Physical Hazards** 0	**Personal Protection** X

Revision date 16-Aug-2016

Revision note

No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

MATERIAL SAFETY DATA SHEET

CHEMGUARD 3% AFFF C-303

Revision Date: 1/25/2006

1. PRODUCT IDENTIFICATION

Chemical Family: Surfactant mixture; fire fighting foam concentrate
Aqueous Film Forming Foam

Product name: Chemguard 3% AFFF C-303

Manufacturer: Chemguard, Inc.
204 South 6th Ave.
Mansfield, TX 76063
emergency phone: 817-473-9964

2. COMPOSITION / INFORMATION ON INGREDIENTS

		ACGIH/PPM		OSHA/PPM	
CAS NO.	Common Name	TWA	STEL	PEL	% by wt
7732-18-5	water				85% - 90%
57018-52-7	propylene glycol t-butyl ether	not established			2% - 4%
7487-88-9	magnesium sulfate	N/A	N/A	N/A	1% - 2%
proprietary mixture	proprietary hydrocarbon surfactant	N/A	N/A	N/A	proprietary
proprietary mixture	proprietary fluorosurfactant	N/A	N/A	N/A	proprietary

3. HAZARDS IDENTIFICATION

Routes of entry: Dermal, inhalation and ingestion
Potential Health Effects: May cause skin and eye irritation.

Carcinogenicity: Not a carcinogen.

4. FIRST AID MEASURES

Ingestion: Do not induce vomiting. Call a physician.
Inhalation: Remove to fresh air.
Skin: Rinse with water. Wash with soap and water. Contaminated clothing should be washed before re-use.
Eyes: Rinse with water. Call a physician.

5. FIRE FIGHTING MEASURES

Flash Point:	>150°F
Flammable Limits in air (lower % by volume):	not evaluated
Flammable Limits in air (upper % by volume):	not evaluated
Auto-ignition Temperature:	not evaluated

General Hazards: None known.
Fire Fighting Equipment: Self contained breathing apparatus
Fire Extinguishing Media: Water, Foam, Carbon Dioxide, Dry Chemical, Halon
Fire and Explosion Hazards: Decomposition products may be toxic.
Hazardous Combustion Products: oxides of nitrogen, sulfur and carbon

6. ACCIDENTAL RELEASE

Contain spills. Vacuum or pump into storage containers, absorb smaller quantities with absorbent materials, and dispose of properly. Washing area with water will create large amounts of foam.

Dispose of released and contained material in accordance with local, state, and federal regulations. Release to local waste treatment plant only with permission.

7. HANDLING AND STORAGE

Store in original container, or appropriate end-use device. Store at temperatures of 35 - 120 degrees F. If the material freezes, it may be thawed without loss of performance.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Eye Protection: Wear side-shield safety glasses.
Skin Protection: Wear latex gloves.
Respiratory Protection: Use organic vapor respirator if needed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	205° - 212°F
Melting Point:	30° F
Specific Gravity:	1.012 g/ml
Vapor Pressure (mm Hg):	N/A
pH	7.0 - 8.5
Flash Point (PMCC):	>150°F
Vapor Density (air = 1)	N/A
Solubility in water:	100%
Appearance:	clear amber liquid
Odor:	slight solvent odor

10. STABILITY AND REACTIVITY

Stability: Stable
Incompatibility: Strong oxidizers
Hazardous Polymerization: Will not occur.
Decomposition Products: Oxides of nitrogen, sulfur, carbon.

11. TOXICOLOGICAL INFORMATION

Eye Irritation: (Rabbits) mild irritant
Skin Irritation: (Rabbits) minimal irritant

Inhalation Toxicity:	not evaluated
Sensitization:	not evaluated
Teratology:	not evaluated
Mutagenicity:	not evaluated
Reproduction:	not evaluated
Acute Oral Effects (Rats):	not evaluated

12. ECOLOGICAL INFORMATION

	CONCENTRATE	SOLUTION (AS USED)
Chemical Oxygen Demand:	210,000 mg/l	6,300 mg/l
Biological Oxygen Demand (20 day):	79,800 mg/l	2,394 mg/l
Biodegradability (B.O.D./C.O.D.)	38%	38%
Total Organic Carbon:	33,600 mg/l	1008 mg/l
LC50 (96 hour pimephales promelas)	233 ppm	7767 ppm
LC50 (48 hour, daphnia magna)	1110 ppm	37,000 ppm

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with local, state, and federal regulations. Discharge to waste treatment plants only with permission. Anti-foam agents may be used to reduce foaming in waste streams.

14. TRANSPORTATION INFORMATION

Department of Transportation proper shipping name: not regulated

15. REGULATORY INFORMATION

All ingredients are on the TSCA inventory.
No components are reportable under SARA Title III, sec. 313
No components are priority pollutants listed under the U.S. Clean Water Act Section 307 (2)(1) Priority Pollutant List (40 CFR 401.15).
No components are reportable under **CERCLA**.

16. OTHER INFORMATION

NFPA Hazard Ratings		**HMIS Identification System**
1	Health Hazard Rating	1
1	Flammability Rating	1
0	Instability/Reactivity Rating	0

CHANGE LOG:

Revision 2 - Revision date changed.

Safety Data Sheet

This safety data sheet complies with the requirements of: 2012 OSHA Hazard Communication Standard (29CFR 1910.1200)

Product name CHEMGUARD 3% AFFF 320G (C3B)

1. Identification

1.1. Product Identifier

Product name CHEMGUARD 3% AFFF 320G (C3B)

1.2. Other means of identification

Product code 704098
Synonyms None
Chemical Family No information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use Fire extinguishing agent.
Uses advised against Consumer use.

1.4. Details of the Supplier of the Safety Data Sheet

Company Name Tyco Fire Protection Products
One Stanton Street
Marinette, WI 54143-2542
Telephone: 715-735-7411
Contact point Product Stewardship at 1-715-735-7411
E-mail address psra@tycofp.com

1.5. Emergency Telephone Number

Emergency telephone CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation - Category 2A

2.2. Label Elements

Signal Word
WARNING

Hazard Statements
Causes serious eye irritation

Precautionary Statements

Prevention
Wash face, hands and any exposed skin thoroughly after handling. Wear eye/face protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

2.3. Hazards Not Otherwise Classified (HNOC)
Not Applicable.

2.4. Other Information
Unknown Acute Toxicity 13.7938% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/information on Ingredients

3.1. Mixture
The following component(s) in this product are considered hazardous under applicable OSHA(USA)

Chemical name	CAS No.	weight-%
2-(2-Butoxyethoxy)ethanol	112-34-5	5 - 10
Lauryl Imino Propionate, Sodium Salt	14960-06-6	1 - 5
Polyfluorinated alkyl betaine	Proprietary	1 - 5

4. First aid measures

4.1. Description of first aid measures
Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water. Get medical attention if irritation develops and persists.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. (Get medical attention immediately if symptoms occur.).

Ingestion Rinse mouth. Do not induce vomiting without medical advice. If swallowed, call a poison control center or physician immediately.

4.2. Most Important Symptoms and Effects, Both Acute and Delayed
Symptoms No information available.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed
Note to physicians Treat symptomatically.

5. Fire-fighting measures

5.1. Suitable Extinguishing Media
Product is extinguishing agent. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Unsuitable Extinguishing Media
None.

5.3. Specific Hazards Arising from the Chemical
None known.

Hazardous Combustion Products	Carbon oxides, Fluorinated oxides, Nitrogen oxides (NOx), Oxides of sulfur

5.4. Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

5.5. Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal Precautions	Ensure adequate ventilation, especially in confined areas.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental Precautions

Environmental Precautions	Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Cleaning Up	Pick up and transfer to properly labeled containers.

7. Handling and Storage

7.1. Precautions for Safe Handling

Advice on safe handling	Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Incompatible Materials	Strong oxidizing agents. Strong acids. Strong bases.

8. Exposure Controls/Personal Protection

8.1. Control Parameters

Exposure guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL

2-(2-Butoxyethoxy)ethanol 112-34-5	TWA: 10 ppm inhalable fraction and vapor	-	-	-

ACGIH (American Conference of Governmental Industrial Hygienists) OSHA (Occupational Safety and Health Administration of the US Department of Labor) NIOSH IDLH Immediately Dangerous to Life or Health

8.2. Appropriate Engineering Controls

Engineering controls Showers
Eyewash stations
Ventilation systems.

8.3. Individual protection measures, such as personal protective equipment

Eye/Face Protection Avoid contact with eyes. Tight sealing safety goggles.

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Ventilation Use local exhaust or general dilution ventilation to control exposure with applicable limits

8.4. General hygiene considerations
Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State Liquid
Odor Characteristic **Color** Amber
Odor Threshold No data available

Property	Values	Remarks • Method
pH	No data available	
Melting point/freezing point	No data available	
Boiling point / boiling range	100 °C / 212 °F	
Flash Point	No data available	
Evaporation Rate	No data available	
Flammability (solid, gas)	No data available	
Flammability limit in air		
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor Pressure	No data available	
Vapor Density	No data available	
Specific gravity	No data available	
Water Solubility	No data available	
Solubility in Other Solvents	No data available	
Partition coefficient	No data available	
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Kinematic viscosity	No data available	

Density 1.01 g/cm3

10. Stability and Reactivity

10.1. Chemical Stability

Stable under recommended storage conditions.

10.2. Reactivity

No data available

10.3. Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

10.4. Conditions to Avoid

Extremes of temperature and direct sunlight.

10.5. Incompatible Materials

Strong oxidizing agents. Strong acids. Strong bases.

10.6. Hazardous decomposition products

Carbon oxides. Nitrogen oxides (NOx). Oxides of sulfur. Fluorinated oxides.

11. Toxicological Information

11.1. Information on Likely Routes of Exposure

Product information No data available

Inhalation No data available.

Eye Contact Severely irritating to eyes.

Skin contact No data available.

Ingestion No data available.

Component Information

Acute Toxicity

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
2-(2-Butoxyethoxy)ethanol 112-34-5	= 5660 mg/kg (Rat)	= 2700 mg/kg (Rabbit)	-

11.2. Information on Toxicological Effects

Symptoms No information available.

11.3. Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin Corrosion/Irritation	No information available.
Serious eye damage/eye irritation	Severely irritating to eyes.
Sensitization	No information available.
Germ Cell Mutagenicity	No information available.
Carcinogenicity	No information available.
Reproductive Toxicity	No information available.
STOT - Single Exposure	No information available.
STOT - Repeated Exposure	No information available.
Aspiration Hazard	No information available.

11.4. Numerical Measures of Toxicity - Product information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	25600 mg/kg
ATEmix (dermal)	27648 mg/kg

12. Ecological Information

12.1. Ecotoxicity

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical name	Algae/aquatic plants	Fish	Crustacea
2-(2-Butoxyethoxy)ethanol 112-34-5	EC50 (96h) > 100 mg/L Desmodesmus subspicatus	LC50 (96h) static = 1300 mg/L Lepomis macrochirus	EC50 (48h) > 100 mg/L Daphnia magna EC50 (24h) = 2850 mg/L Daphnia magna
1,2-Propanediol 57-55-6	EC50 (96h) = 19000 mg/L Pseudokirchneriella subcapitata	LC50 (96h) static 41 - 47 mL/L Oncorhynchus mykiss LC50 (96h) static = 51600 mg/L Oncorhynchus mykiss LC50 (96h) static = 51400 mg/L Pimephales promelas LC50 (96h) = 710 mg/L Pimephales promelas	EC50 (24h) > 10000 mg/L Daphnia magna EC50 (48h) Static > 1000 mg/L Daphnia magna
1-Octanol 111-87-5	EC50 (48h) static = 14 mg/L Desmodesmus subspicatus	LC50 (96h) static = 17.68 mg/L Oncorhynchus mykiss LC50 (96h) flow-through 11.4 - 12.9 mg/L Pimephales promelas	EC50 (24h) 15 - 26 mg/L Daphnia magna

Concentrate

Method	Biological Test Method: Acute Lethality Test Using Daphnia ssp. (EPS 1/RM/11)
Species	Daphnia magna
Endpoint type	LC50
Effective dose	928 mg/L
Exposure time	48h
Method	Biological Test Method: Acute Lethality Test Using Daphnia ssp. (EPS 1/RM/11)
Species	Daphnia magna
Endpoint type	EC50
Effective dose	790 mg/L
Exposure time	48h
Method	Biological Test Method: Acute Lethality Test Using Rainbow Trout (EPS 1/RM/9)
Species	Oncorhynchus mykiss (rainbow trout)
Endpoint type	LC50
Effective dose	5,320 mg/L
Exposure time	96h

3% Solution

Method	Biological Test Method: Acute Lethality Test Using Daphnia ssp. (EPS 1/RM/11)
Species	Daphnia magna
Endpoint type	LC50
Effective dose	52,830 mg/L
Exposure time	48h

Method	Biological Test Method: Acute Lethality Test Using Daphnia ssp. (EPS 1/RM/11)
Species	Daphnia magna
Endpoint type	EC50
Effective dose	36,990 mg/L
Exposure time	48h

Method	Biological Test Method: Acute Lethality Test Using Rainbow Trout (EPS 1/RM/9)
Species	Oncorhynchus mykiss (rainbow trout)
Endpoint type	LC50
Effective dose	185,200 mg/L
Exposure time	96h

Method	Biological Test Method: Acute Lethality Using Threespine Stickleback (Gasterosteus aculeatus) (EPS 1/RM/10)
Species	Gasterosteus aculeatus
Endpoint type	LC50
Effective dose	80,000 mg/L
Exposure time	96h

12.2. Persistence and Degradability

.

Chemical Oxygen Demand (mg/L)

Concentrate	230,000
3% Solution	7,000

Concentrate Biological Oxygen Demand (mg/L)

Biological Oxygen Demand (5 Day)	<20000
%BOD/COD	6.96
Biological Oxygen Demand (10 Day)	150000
%BOD/COD	65.22
Biological Oxygen Demand (15 Day)	170000
%BOD/COD	73.91
Biological Oxygen Demand (20 Day)	190000
%BOD/COD	82.61

3% Solution Biological Oxygen Demand (mg/L)

Biological Oxygen Demand (5 Day)	390
%BOD/COD	5.57
Biological Oxygen Demand (10 Day)	4600
%BOD/COD	65.71
Biological Oxygen Demand (15 Day)	5000
%BOD/COD	71.43
Biological Oxygen Demand (20 Day)	5200
%BOD/COD	74.29

12.3. Bioaccumulation

No information available.

12.4. Other Adverse Effects
No information available

13. Disposal Considerations

13.1. Waste Treatment Methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container.

14. Transport Information

DOT	NOT REGULATED
TDG	NOT REGULATED
MEX	NOT REGULATED
ICAO (air)	NOT REGULATED
IATA	NOT REGULATED
IMDG	NOT REGULATED

15. Regulatory Information

15.1. International Inventories

TSCA	Complies
DSL/NDSL	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Does not comply
AICS	Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	SARA 313 - Threshold Values %

2-(2-Butoxyethoxy)ethanol - 112-34-5	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic health hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

15.3. US State Regulations

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
2-(2-Butoxyethoxy)ethanol 112-34-5	X	-	X
1,2-Propanediol 57-55-6	X	-	X
1-Octanol 111-87-5	-	-	X

16. Other information, including date of preparation of the last revision

NFPA	**Health Hazards** 1	**Flammability** 0	**Instability** 0	**Physical and chemical properties** -
HMIS	**Health Hazards** 1	**Flammability** 0	**Physical Hazards** 0	**Personal Protection** X

Revision date 28-Feb-2017
Revision note SDS sections updated, 12.

Disclaimer

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End of Safety Data Sheet

Phos-Chek 3% AFFF MS - [AQUAFILM AF-3MS]

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier: Phos-Chek 3% AFFF MS - [AQUAFILM AF-3MS]

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant uses: Fire-extinguishing. For professional use only.

Uses advised against: All uses not specified in this section or in section 7.3

1.3 Details of the supplier of the safety data sheet:

AUXQUIMIA, S.A.U.
Polígono Industrial de Baiña, parcela 23
33682 Baiña (Mieres) - Asturias - Spain
Phone.: +34 985 242 945 / +34 985 242 946 -
Fax: +34 985 253 809
auxquimia@icl-group.com
www.auxquimia.com

1.4 Emergency telephone number: +34 985 242 945 / +34 985 242 946

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

NFPA:

Health Hazards: 3
Flammability Hazards: 0
Instability Hazards: 0
Special Hazards: Non-applicable

CLP Regulation (EC) nº 1272/2008:

Classification of this product has been carried out in accordance with CLP Regulation (EC) nº 1272/2008.

Eye Dam. 1: Serious eye damage, Category 1, H318

2.2 Label elements:

NFPA:

CLP Regulation (EC) nº 1272/2008:

Danger

Hazard statements:

Eye Dam. 1: H318 - Causes serious eye damage

Precautionary statements:

P280: Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310: Immediately call a POISON CENTER or doctor/physician

Supplementary information:

EUH208: Contains Amphoteric hydrocarbon surfactant 6608110000. May produce an allergic reaction

Substances that contribute to the classification

Non-ionic hydrocarbon surfactant 6607700000; Anionic hydrocarbon surfactant 6201310000; Anionic hydrocarbon surfactant 6608700000

2.3 Other hazards:

Non-applicable

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

- CONTINUED ON NEXT PAGE -

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS (continue)

3.1 Substance:

Non-applicable

3.2 Mixture:

Chemical description: Aqueous solution of tensoactives

Components:

In accordance with Annex II of Regulation (EC) nº1907/2006 (point 3), the product contains:

Identification	Chemical name/Classification		Concentration
CAS: 112-34-5 EC: 203-961-6 Index: 603-096-00-8 REACH: 01-2119475104-44-XXXX	**2-(2-butoxyethoxy)ethanol**	ATP CLP00	**15 - <20 %**
	Regulation 1272/2008	Eye Irrit. 2: H319 - Warning	
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Mixture of fluorosurfactants**	Not classified	**1 - <3 %**
	Regulation 1272/2008		
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Non-ionic hydrocarbon surfactant 6607700000**	Self-classified	**1 - <3 %**
	Regulation 1272/2008	Eye Dam. 1: H318 - Danger	
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Anionic hydrocarbon surfactant 6201310000**	Self-classified	**1 - <3 %**
	Regulation 1272/2008	Acute Tox. 4: H302; Aquatic Chronic 3: H412; Eye Dam. 1: H318; Skin Irrit. 2: H315 - Danger	
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Anionic hydrocarbon surfactant 6608700000**	Self-classified	**1 - <3 %**
	Regulation 1272/2008	Eye Dam. 1: H318; Skin Irrit. 2: H315 - Danger	
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Amphoteric hydrocarbon surfactant 6608110000**	Self-classified	**0,1 - <1 %**
	Regulation 1272/2008	Eye Irrit. 2: H319; Skin Sens. 1: H317 - Warning	
CAS: Non-applicable EC: Non-applicable Index: Non-applicable REACH: Non-applicable	**Anionic hydrocarbon surfactant 6200710000**	Self-classified	**0,1 - <1 %**
	Regulation 1272/2008	Eye Irrit. 2: H319; Skin Irrit. 2: H315 - Warning	
CAS: 111-77-3 EC: 203-906-6 Index: 603-107-00-6 REACH: 01-2119475100-52-XXXX	**2-(2-methoxyethoxy)ethanol**	ATP CLP00	**<0,1 %**
	Regulation 1272/2008	Repr. 2: H361d - Warning	
CAS: 67-56-1 EC: 200-659-6 Index: 603-001-00-X REACH: 01-2119433307-44-XXXX	**Methanol**	ATP CLP00	**<0,1 %**
	Regulation 1272/2008	Acute Tox. 3: H301+H311+H331; Flam. Liq. 2: H225; STOT SE 1: H370 - Danger	

To obtain more information on the risk of the substances consult sections 8, 11, 12, 15 and 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures:

The symptoms resulting from intoxication can appear after exposure, therefore, in case of doubt, seek medical attention for direct exposure to the chemical product or persistent discomfort, showing the SDS of this product.

By inhalation:

This product is not classified as dangerous through inhalation,however, it is recommended in case of intoxication symptoms to remove the person affected from the area of exposure, provide clean air and keep at rest. Request medical attention if symptoms persist.

By skin contact:

This product is not classified as dangerous when in contact with the skin. However, in case of skin contact it is recommended to remove contaminated clothes and shoes, rinse the skin or shower the person affected if necessary thoroughly with cold water and neutral soap. In case of serious reaction consult a doctor.

By eye contact:

Rinse eyes thoroughly with lukewarm water for at least 15 minutes. Do not allow the person affected to rub or close their eyes. If the injured person uses contact lenses, these should be removed unless they are stuck to the eyes, as this could cause further damage. In all cases, after cleaning, a doctor should be consulted as quickly as possible with the SDS of the product.

- CONTINUED ON NEXT PAGE -

SECTION 4: FIRST AID MEASURES (continue)

By ingestion/aspiration:

Do not induce vomiting, but if it does happen keep the head up to avoid inhalation. Keep the person affected at rest. Rinse out the mouth and throat, as they may have been affected during ingestion.

4.2 Most important symptoms and effects, both acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

4.3 Indication of any immediate medical attention and special treatment needed:

Non-applicable

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media:

Product is non-flammable under normal conditions of storage, manipulation and use, containing flammable substances. In the case of inflammation as a result of improper manipulation, storage or use preferably use polyvalent powder extinguishers (ABC powder), in accordance with the Regulation on fire protection systems. IT IS NOT RECOMMENDED to use tap water as an extinguishing agent.

5.2 Special hazards arising from the substance or mixture:

As a result of combustion or thermal decomposition reactive sub-products are created that can become highly toxic and, consequently, can present a serious health risk.

5.3 Advice for firefighters:

Depending on the magnitude of the fire it may be necessary to use full protective clothing and individual respiratory equipment. Minimum emergency facilities and equipment should be available (fire blankets, portable first aid kit,...) in accordance with Directive 89/654/EC.

Additional provisions:

Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. Destroy any source of ignition. In case of fire, refrigerate the storage containers and tanks for products susceptible to inflammation, explosion or BLEVE as a result of high temperatures. Avoid spillage of the products used to extinguish the fire into an aqueous medium.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

Isolate leaks provided that there is no additional risk for the people performing this task. Evacuate the area and keep out those without protection. Personal protection equipment must be used against potential contact with the spilt product (See section 8). Above all prevent the formation of any vapour-air flammable mixtures, through either ventilation or the use of an inertization agent. Destroy any source of ignition. Eliminate electrostatic charges by interconnecting all the conductive surfaces on which static electricity could form, and also ensuring that all surfaces are connected to the ground.

6.2 Environmental precautions:

Avoid spillage into an aqueous medium as it contains substances potentially dangerous for this. Contain the product absorbed in hermetically sealed containers. In the case of serious spillage into an aqueous medium notify the relevant authority.

6.3 Methods and material for containment and cleaning up:

It is recommended:

Absorb the spillage using sand or inert absorbent and move it to a safe place. Do not absorb in sawdust or other combustible absorbents. For any concern related to disposal consult section 13.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A.- Precautions for safe manipulation

Comply with the current legislation concerning the prevention of industrial risks. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions

- CONTINUED ON NEXT PAGE -

SECTION 7: HANDLING AND STORAGE (continue)

Avoid the evaporation of the product as it contains flammable substances, which could form flammable vapour/air mixtures in the presence of sources of ignition. Control sources of ignition (mobile phones, sparks,...) and transfer at slow speeds to avoid the creation of electrostatic charges. Avoid projections and pulverizations. Consult section 10 for conditions and materials that should be avoided.

C.- Technical recommendations to prevent ergonomic and toxicological risks

Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks

It is recommended to have absorbent material available at close proximity to the product (See subsection 6.3)

7.2 Conditions for safe storage, including any incompatibilities:

A.- Technical measures for storage

Minimum Temp.: 0 ºC

Maximun Temp.: 50 ºC

B.- General conditions for storage

Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5

7.3 Specific end use(s):

Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters:

Substances whose occupational exposure limits have to be monitored in the work environment

Identification	Environmental limits		
2-(2-butoxyethoxy)ethanol	IOELV (8h)	10 ppm	67,5 mg/m³
CAS: 112-34-5	IOELV (STEL)	15 ppm	101,2 mg/m³
EC: 203-961-6	Year	2014	
2-(2-methoxyethoxy)ethanol	IOELV (8h)	10 ppm	50,1 mg/m³
CAS: 111-77-3	IOELV (STEL)		
EC: 203-906-6	Year	2014	
Methanol	IOELV (8h)	200 ppm	260 mg/m³
CAS: 67-56-1	IOELV (STEL)		
EC: 200-659-6	Year	2014	

DNEL (Workers):

Identification		Short exposure		Long exposure	
		Systemic	Local	Systemic	Local
2-(2-butoxyethoxy)ethanol	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: 112-34-5	Dermal	Non-applicable	Non-applicable	20 mg/kg	Non-applicable
EC: 203-961-6	Inhalation	Non-applicable	101,2 mg/m³	67,5 mg/m³	67,5 mg/m³
Non-ionic hydrocarbon surfactant 6607700000	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	595000 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	420 mg/m³	Non-applicable
Anionic hydrocarbon surfactant 6201310000	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	4060 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	285 mg/m³	Non-applicable
Anionic hydrocarbon surfactant 6608700000	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	4060 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	285 mg/m³	Non-applicable
2-(2-methoxyethoxy)ethanol	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: 111-77-3	Dermal	Non-applicable	Non-applicable	0,53 mg/kg	Non-applicable
EC: 203-906-6	Inhalation	Non-applicable	Non-applicable	50,1 mg/m³	Non-applicable
Methanol	Oral	Non-applicable	Non-applicable	Non-applicable	Non-applicable
CAS: 67-56-1	Dermal	40 mg/kg	Non-applicable	40 mg/kg	Non-applicable
EC: 200-659-6	Inhalation	260 mg/m³	260 mg/m³	260 mg/m³	260 mg/m³

- CONTINUED ON NEXT PAGE -

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continue)

DNEL (General population):

Identification		Short exposure		Long exposure	
		Systemic	Local	Systemic	Local
2-(2-butoxyethoxy)ethanol	Oral	Non-applicable	Non-applicable	1,25 mg/kg	Non-applicable
CAS: 112-34-5	Dermal	Non-applicable	Non-applicable	10 mg/kg	Non-applicable
EC: 203-961-6	Inhalation	Non-applicable	50,6 mg/m³	34 mg/m³	34 mg/m³
Non-ionic hydrocarbon surfactant 6607700000	Oral	Non-applicable	Non-applicable	35,7 mg/kg	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	357000 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	124 mg/m³	Non-applicable
Anionic hydrocarbon surfactant 6201310000	Oral	Non-applicable	Non-applicable	24 mg/kg	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	2440 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	85 mg/m³	Non-applicable
Anionic hydrocarbon surfactant 6608700000	Oral	Non-applicable	Non-applicable	24 mg/kg	Non-applicable
CAS: Non-applicable	Dermal	Non-applicable	Non-applicable	2440 mg/kg	Non-applicable
EC: Non-applicable	Inhalation	Non-applicable	Non-applicable	85 mg/m³	Non-applicable
2-(2-methoxyethoxy)ethanol	Oral	Non-applicable	Non-applicable	1,5 mg/kg	Non-applicable
CAS: 111-77-3	Dermal	Non-applicable	Non-applicable	0,27 mg/kg	Non-applicable
EC: 203-906-6	Inhalation	Non-applicable	Non-applicable	25 mg/m³	Non-applicable
Methanol	Oral	8 mg/kg	Non-applicable	8 mg/kg	Non-applicable
CAS: 67-56-1	Dermal	8 mg/kg	Non-applicable	8 mg/kg	Non-applicable
EC: 200-659-6	Inhalation	50 mg/m³	50 mg/m³	50 mg/m³	50 mg/m³

PNEC:

Identification				
2-(2-butoxyethoxy)ethanol	STP	200 mg/L	Fresh water	1 mg/L
CAS: 112-34-5	Soil	0,4 mg/kg	Marine water	0,1 mg/L
EC: 203-961-6	Intermittent	3,9 mg/L	Sediment (Fresh water)	4 mg/kg
	Oral	56 g/kg	Sediment (Marine water)	0,4 mg/kg
Non-ionic hydrocarbon surfactant 6607700000	STP	560 mg/L	Fresh water	0,176 mg/L
CAS: Non-applicable	Soil	0,654 mg/kg	Marine water	0,0176 mg/L
EC: Non-applicable	Intermittent	0,27 mg/L	Sediment (Fresh water)	1,516 mg/kg
	Oral	111,11 g/kg	Sediment (Marine water)	0,152 mg/kg
Anionic hydrocarbon surfactant 6201310000	STP	1,35 mg/L	Fresh water	0,095 mg/L
CAS: Non-applicable	Soil	0,2445 mg/kg	Marine water	0,0095 mg/L
EC: Non-applicable	Intermittent	0,086 mg/L	Sediment (Fresh water)	1,5 mg/kg
	Oral	Non-applicable	Sediment (Marine water)	0,15 mg/kg
Anionic hydrocarbon surfactant 6608700000	STP	1,35 mg/L	Fresh water	0,1357 mg/L
CAS: Non-applicable	Soil	0,22 mg/kg	Marine water	0,01357 mg/L
EC: Non-applicable	Intermittent	Non-applicable	Sediment (Fresh water)	1,5 mg/kg
	Oral	Non-applicable	Sediment (Marine water)	0,15 mg/kg
2-(2-methoxyethoxy)ethanol	STP	10000 mg/L	Fresh water	12 mg/L
CAS: 111-77-3	Soil	2,44 mg/kg	Marine water	1,2 mg/L
EC: 203-906-6	Intermittent	12 mg/L	Sediment (Fresh water)	44,4 mg/kg
	Oral	90 g/kg	Sediment (Marine water)	0,44 mg/kg
Methanol	STP	100 mg/L	Fresh water	154 mg/L
CAS: 67-56-1	Soil	23,5 mg/kg	Marine water	15,4 mg/L
EC: 200-659-6	Intermittent	1540 mg/L	Sediment (Fresh water)	570,4 mg/kg
	Oral	Non-applicable	Sediment (Marine water)	Non-applicable

8.2 Exposure controls:

A.- General security and hygiene measures in the work place

If product is used at the concentration dosing conditions specified in the relevant instructions for use (section 15), personal protective equipment described in section 8.2 for UNDILUTED products will not be required.

Safe handling recommendations for undiluted product:

- CONTINUED ON NEXT PAGE -

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continue)

As a preventative measure it is recommended to use basic Personal Protection Equipment, with the corresponding <<CE marking>> in accordance with Directive 89/686/EC. For more information on Personal Protection Equipment (storage, use, cleaning, maintenance, class of protection,…) consult the information leaflet provided by the manufacturer. For more information see subsection 7.1.
All information contained herein is a recommendation which needs some specification from the labour risk prevention services as it is not known whether the company has additional measures at its disposal.

B.- Respiratory protection

The use of protection equipment will be necessary if a mist forms or if the professional exposure limits are exceeded.

C.- Specific protection for the hands

Pictogram	PPE	Labelling	CEN Standard	Remarks
 Mandatory hand protection	Chemical protective gloves	CE CAT I	EN 374-1:2003 EN 374-3:2003/AC:2006 EN 420:2003+A1:2009	Replace the gloves at any sign of deterioration.

D.- Ocular and facial protection

Pictogram	PPE	Labelling	CEN Standard	Remarks
 Mandatory face protection	Panoramic glasses against liquid splash	CE CAT II	EN 166:2001 EN 172:1994/A1:2000 EN 172:1994/A2:2001 EN ISO 4007:2012	Clean daily and disinfect periodically according to the manufacturer´s instructions. Use if there is a risk of splashing.

E.- Bodily protection

Pictogram	PPE	Labelling	CEN Standard	Remarks
	Work clothing	CE CAT I	EN ISO 13688:2013	For professional use only.
	Anti-slip work shoes	CE CAT II	EN ISO 20347:2012 EN ISO 20344:2011	None

F.- Additional emergency measures

Emergency measure	Standards	Emergency measure	Standards
 Emergency shower	ANSI Z358-1 ISO 3864-1:2002	 Eyewash stations	DIN 12 899 ISO 3864-1:2002

Environmental exposure controls:

In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. For additional information see subsection 7.1.D

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

For complete information see the product datasheet.

Appearance:

Physical state at 20 ºC:	Liquid
Appearance:	Transparent
Color:	Yellowish
Odor:	Characteristic

Volatility:

*Not relevant due to the nature of the product, not providing information property of its hazards.

- CONTINUED ON NEXT PAGE -

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continue)

Boiling point at atmospheric pressure:	Non-applicable *
Vapour pressure at 20 ºC:	Non-applicable *
Vapour pressure at 50 ºC:	Non-applicable *
Evaporation rate at 20 ºC:	Non-applicable *
Product description:	
Density at 20 ºC:	1000 - 1040 kg/m³
Relative density at 20 ºC:	Non-applicable *
Dynamic viscosity at 20 ºC:	4 cP
Kinematic viscosity at 20 ºC:	Non-applicable *
Kinematic viscosity at 40 ºC:	Non-applicable *
Concentration:	Non-applicable *
pH:	7 - 8,5
Vapour density at 20 ºC:	Non-applicable *
Partition coefficient n-octanol/water 20 ºC:	Non-applicable *
Solubility in water at 20 ºC:	Non-applicable *
Solubility properties:	Highly water-soluble
Decomposition temperature:	Non-applicable *
Melting point/freezing point:	Non-applicable *
Flammability:	
Flash Point:	Non Flammable (>60 ºC)
Autoignition temperature:	Non-applicable *
Lower flammability limit:	Non-applicable *
Upper flammability limit:	Non-applicable *

9.2 Other information:

Surface tension at 20 ºC:	Non-applicable *
Refraction index:	1,367

*Not relevant due to the nature of the product, not providing information property of its hazards.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

No hazardous reactions are expected if the following technical instructions storage of chemicals. See section 7.

10.2 Chemical stability:

Chemically stable under the conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

10.4 Conditions to avoid:

Applicable for handling and storage at room temperature:

Shock and friction	Contact with air	Increase in temperature	Sunlight	Humidity
Not applicable	Not applicable	Precaution	Precaution	Not applicable

10.5 Incompatible materials:

Acids	Water	Combustive materials	Combustible materials	Others
Not applicable	Not applicable	Avoid direct impact	Not applicable	Not applicable

10.6 Hazardous decomposition products:

See subsection 10.3, 10.4 and 10.5 to find out the specific decomposition products. Depending on the decomposition conditions, complex mixtures of chemical substances can be released: carbon dioxide (CO2), carbon monoxide and other organic compounds.

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SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

The experimental information related to the toxicological properties of the product itself is not available

Contains glycols. With possibility of effects that are hazardous to the health, it is recommended not to breathe the vapours for long periods of time.

Dangerous health implications:

In case of exposure that is repetitive, prolonged or at concentrations higher than recommended by the occupational exposure limits, it may result in adverse effects on health depending on the means of exposure:

A.- Ingestion:

- Acute toxicity: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for consumption. For more information see section 3.
- Corrosivity/Irritability: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for consumption. For more information see section 3.

B- Inhalation:

- Acute toxicity: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for inhalation. For more information see section 3.
- Corrosivity/Irritability: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.

C- Contact with the skin and the eyes:

- Contact with the skin: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for skin contact. For more information see section 3.
- Contact with the eyes: Produces serious eye damage after contact.

D- CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):

- Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for the effects mentioned. For more information see section 3.
- Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- Reproductive toxicity: Based on available data, the classification criteria are not met, however it does contain substances classified as dangerous for this effect. For more information see section 3.

E- Sensitizing effects:

- Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous with sensibilizising effects. For more information see section 3.
- Cutaneous: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous with sensibilizising effects. For more information see section 3.

F- Specific target organ toxicity (STOT)-time exposure:

Based on available data, the classification criteria are not met, however, it does contain substances which are classified as dangerous as a result of a single exposure. For more information see section 3.

G- Specific target organ toxicity (STOT)-repeated exposure:

- Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.
- Skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.

H- Aspiration hazard:

Based on available data, the classification criteria are not met, as it does not contain substances classified as dangerous for this effect. For more information see section 3.

Other information:

Non-applicable

Specific toxicology information on the substances:

Identification	Acute toxicity		Genus
2-(2-methoxyethoxy)ethanol	LD50 oral	7128 mg/kg	Rat
CAS: 111-77-3	LD50 dermal	9404 mg/kg	Rabbit
EC: 203-906-6	LC50 inhalation	Non-applicable	
Anionic hydrocarbon surfactant 6201310000	LD50 oral	580 mg/kg	Rat
CAS: Non-applicable	LD50 dermal	Non-applicable	
EC: Non-applicable	LC50 inhalation	Non-applicable	
Methanol	LD50 oral	100 mg/kg	Rat
CAS: 67-56-1	LD50 dermal	300 mg/kg	Rabbit

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SECTION 11: TOXICOLOGICAL INFORMATION (continue)

Identification	Acute toxicity		Genus
EC: 200-659-6	LC50 inhalation	3 mg/L (4 h)	Rat

SECTION 12: ECOLOGICAL INFORMATION

The experimental information related to the eco-toxicological properties of the product itself is not available

12.1 Toxicity:

Identification	Acute toxicity		Specie	Genus
2-(2-butoxyethoxy)ethanol	LC50	1300 mg/L (96 h)	Lepomis macrochirus	Fish
CAS: 112-34-5	EC50	2850 mg/L (24 h)	Daphnia magna	Crustacean
EC: 203-961-6	EC50	53 mg/L (192 h)	Microcystis aeruginosa	Algae
Non-ionic hydrocarbon surfactant 6607700000	LC50	126 mg/L (96 h)	Brachydanio rerio	Fish
CAS: Non-applicable	EC50	151 mg/L (48 h)	Acartia tonsa	Crustacean
EC: Non-applicable	EC50	27 mg/L (72 h)	Scenedesmus subspicatus	Algae
Anionic hydrocarbon surfactant 6201310000	LC50	177 mg/L (96 h)	Brachydanio rerio	Fish
CAS: Non-applicable	EC50	Non-applicable		
EC: Non-applicable	EC50	21,5 mg/L (72 h)	Pseudokirchneriella subcapitata	Algae
2-(2-methoxyethoxy)ethanol	LC50	5741 mg/L (96 h)	Pimephales promelas	Fish
CAS: 111-77-3	EC50	1192 mg/L (48 h)	Daphnia magna	Crustacean
EC: 203-906-6	EC50	Non-applicable		
Methanol	LC50	15400 mg/L (96 h)	Lepomis macrochirus	Fish
CAS: 67-56-1	EC50	12000 mg/L (96 h)	Nitrocra spinipes	Crustacean
EC: 200-659-6	EC50	530 mg/L (168 h)	Microcystis aeruginosa	Algae

12.2 Persistence and degradability:

Identification	Degradability		Biodegradability	
2-(2-butoxyethoxy)ethanol	BOD5	0.25 g O2/g	Concentration	100 mg/L
CAS: 112-34-5	COD	2.08 g O2/g	Period	28 days
EC: 203-961-6	BOD5/COD	0.12	% Biodegradable	92 %
Non-ionic hydrocarbon surfactant 6607700000	BOD5	Non-applicable	Concentration	Non-applicable
CAS: Non-applicable	COD	Non-applicable	Period	28 days
EC: Non-applicable	BOD5/COD	Non-applicable	% Biodegradable	100 %
Anionic hydrocarbon surfactant 6201310000	BOD5	Non-applicable	Concentration	2 mg/L
CAS: Non-applicable	COD	Non-applicable	Period	30 days
EC: Non-applicable	BOD5/COD	Non-applicable	% Biodegradable	98 %
2-(2-methoxyethoxy)ethanol	BOD5	Non-applicable	Concentration	Non-applicable
CAS: 111-77-3	COD	Non-applicable	Period	28 days
EC: 203-906-6	BOD5/COD	0.07	% Biodegradable	100 %
Methanol	BOD5	Non-applicable	Concentration	100 mg/L
CAS: 67-56-1	COD	1.42 g O2/g	Period	14 days
EC: 200-659-6	BOD5/COD	Non-applicable	% Biodegradable	92 %

12.3 Bioaccumulative potential:

Identification	Bioaccumulation potential	
2-(2-butoxyethoxy)ethanol	BCF	0,46
CAS: 112-34-5	Pow Log	0,56
EC: 203-961-6	Potential	Low
2-(2-methoxyethoxy)ethanol	BCF	3
CAS: 111-77-3	Pow Log	-1,18
EC: 203-906-6	Potential	Low
Methanol	BCF	3
CAS: 67-56-1	Pow Log	-0,77
EC: 200-659-6	Potential	Low

12.4 Mobility in soil:

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SECTION 12: ECOLOGICAL INFORMATION (continue)

Identification	Absorption/desorption		Volatility	
2-(2-butoxyethoxy)ethanol	Koc	48	Henry	7,2E-9 Pa·m³/mol
CAS: 112-34-5	Conclusion	Very High	Dry soil	No
EC: 203-961-6	Surface tension	33950 N/m (25 ºC)	Moist soil	No
Non-ionic hydrocarbon surfactant 6607700000	Koc	50	Henry	1,2E-8 Pa·m³/mol
CAS: Non-applicable	Conclusion	Very High	Dry soil	No
EC: Non-applicable	Surface tension	Non-applicable	Moist soil	No
Anionic hydrocarbon surfactant 6201310000	Koc	150	Henry	1,06E-2 Pa·m³/mol
CAS: Non-applicable	Conclusion	Very High	Dry soil	Non-applicable
EC: Non-applicable	Surface tension	33200 N/m (24 ºC)	Moist soil	Non-applicable
2-(2-methoxyethoxy)ethanol	Koc	1	Henry	1,621E-6 Pa·m³/mol
CAS: 111-77-3	Conclusion	Very High	Dry soil	Non-applicable
EC: 203-906-6	Surface tension	35900 N/m (25 ºC)	Moist soil	No
Methanol	Koc	Non-applicable	Henry	Non-applicable
CAS: 67-56-1	Conclusion	Non-applicable	Dry soil	Non-applicable
EC: 200-659-6	Surface tension	23550 N/m (25 ºC)	Moist soil	Non-applicable

12.5 Results of PBT and vPvB assessment:

Non-applicable

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Code	Description	Waste class (Regulation (EU) No 1357/2014)
16 05 08*	Discarded organic chemicals consisting of or containing hazardous substances	Dangerous

Type of waste (Regulation (EU) No 1357/2014):

HP4 Irritant — skin irritation and eye damage

Waste management (disposal and evaluation):

Consult the authorized waste service manager on the assessment and disposal operations in accordance with Annex 1 and Annex 2 (Directive 2008/98/EC). As under 15 01 (2014/955/EC) of the code and in case the container has been in direct contact with the product, it will be processed the same way as the actual product. Otherwise, it will be processed as non-dangerous residue. We do not recommended disposal down the drain. See paragraph 6.2.

Regulations related to waste management:

In accordance with Annex II of Regulation (EC) nº1907/2006 (REACH) the community or state provisions related to waste management are stated

Community legislation: Directive 2008/98/EC, 2014/955/EU, Regulation (EU) No 1357/2014

SECTION 14: TRANSPORT INFORMATION

This product is not regulated for transport (ADR/RID,IMDG,IATA)

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Candidate substances for authorisation under the Regulation (EC) 1907/2006 (REACH): Non-applicable

Substances included in Annex XIV of REACH ("Authorisation List") and sunset date: Non-applicable

Regulation (EC) 1005/2009, about substances that deplete the ozone layer: Non-applicable

Active substances for which a decision of non-inclusion onto Annex I (Regulation (EU) No 528/2012): Non-applicable

REGULATION (EU) No 649/2012, in relation to the import and export of hazardous chemical products: Non-applicable

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SECTION 15: REGULATORY INFORMATION (continue)

Limitations to commercialisation and the use of certain dangerous substances and mixtures (Annex XVII, REACH):

Non-applicable

Specific provisions in terms of protecting people or the environment:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of the local circumstances in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Relevant instructions for use:

This product is intended for the production of foam for fire extinguishing purposes. It should be diluted at 3% in water and used with appropriate foam-generating equipment.

Other legislation:

The product could be affected by sectorial legislation

15.2 Chemical safety assessment:

The supplier has not carried out evaluation of chemical safety.

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with ANNEX II-Guide to the compilation of safety data sheets of Regulation (EC) Nº 1907/2006 (Regulation (EU) Nº 453/2010, Regulation (EC) Nº 2015/830)

Modifications related to the previous security card which concerns the ways of managing risks. :

Non-applicable

Texts of the legislative phrases mentioned in section 2:

H318: Causes serious eye damage

Texts of the legislative phrases mentioned in section 3:

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3

CLP Regulation (EC) nº 1272/2008:

Acute Tox. 3: H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
Acute Tox. 4: H302 - Harmful if swallowed
Aquatic Chronic 3: H412 - Harmful to aquatic life with long lasting effects
Eye Dam. 1: H318 - Causes serious eye damage
Eye Irrit. 2: H319 - Causes serious eye irritation
Flam. Liq. 2: H225 - Highly flammable liquid and vapour
Repr. 2: H361d - Suspected of damaging the unborn child.
Skin Irrit. 2: H315 - Causes skin irritation
Skin Sens. 1: H317 - May cause an allergic skin reaction
STOT SE 1: H370 - Causes damage to organs

Classification procedure:

Eye Dam. 1: Calculation method

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

http://esis.jrc.ec.europa.eu
http://echa.europa.eu
http://eur-lex.europa.eu

Abbreviations and acronyms:

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SECTION 16: OTHER INFORMATION (continue)

- ADR: European agreement concerning the international carriage of dangerous goods by road
-IMDG: International maritime dangerous goods code
-IATA: International Air Transport Association
-ICAO: International Civil Aviation Organisation
-COD: Chemical Oxygen Demand
-BOD5: 5-day biochemical oxygen demand
-BCF: Bioconcentration factor
-LD50: Lethal Dose 50
-CL50: Lethal Concentration 50
-EC50: Effective concentration 50
-Log-POW: Octanol–water partition coefficient
-Koc: Partition coefficient of organic carbon

- END OF SAFETY DATA SHEET -